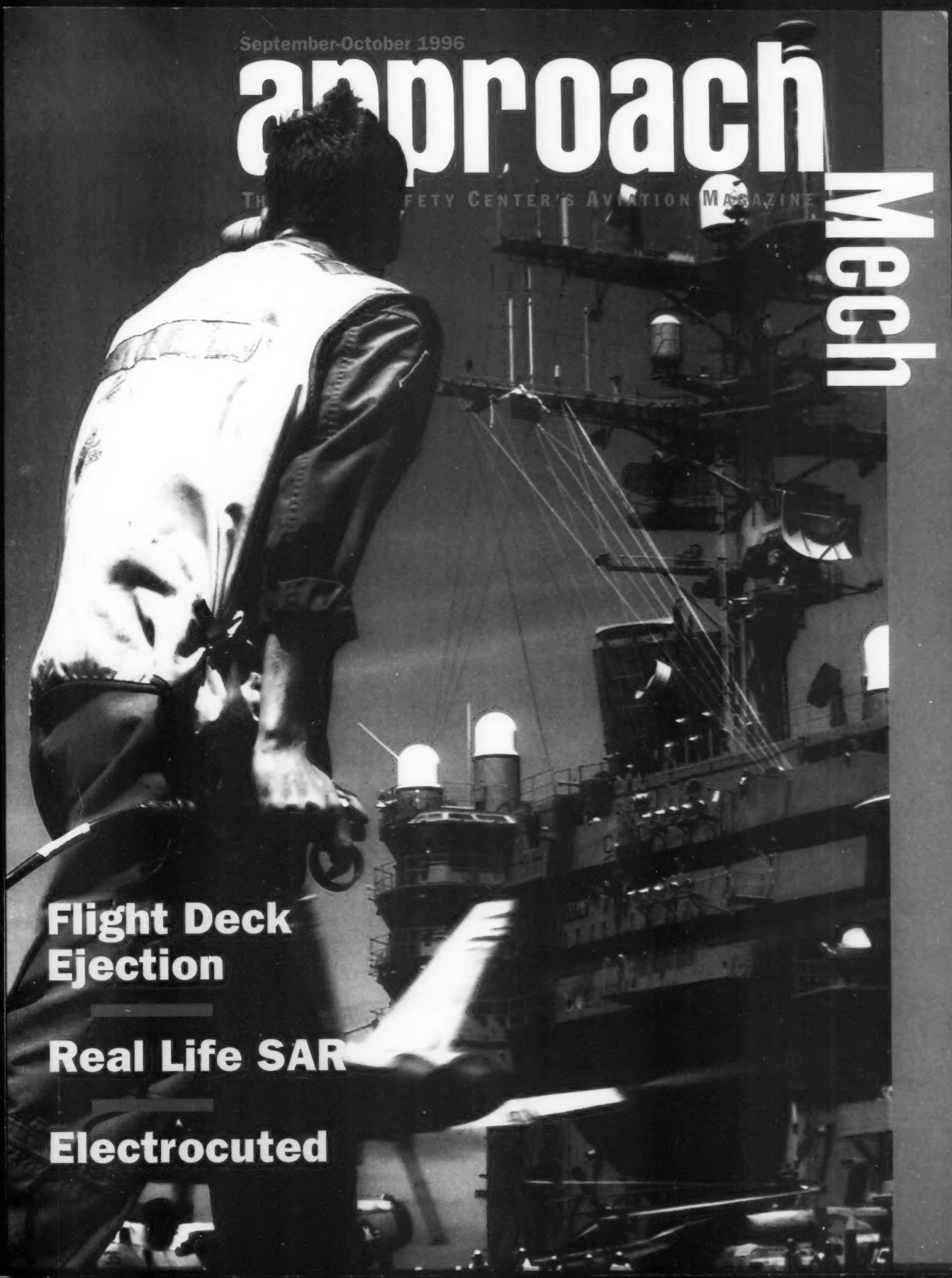
September-October 1996

approach

THE SAFETY CENTER'S AVIATION MAGAZINE

Mech



Flight Deck Ejection

Real Life SAR

Electrocuted

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On the cover: LSO watches an FA-18 trap on board USS *Vinson* (CVN 70). *Photo by PH3 Jason Drake.*

RAdm. Frank M. Dirren, Jr., Commander, Naval Safety Center
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LESSONS LEARNED

There are two ways to get smart. One is through experience – we call this "the hard way." The other is to learn through others' experiences. The second method is much easier on our machines and bodies.

Disturbing Trends in Preflight

Preflight your aircraft like your life depends on it — 'cause it does. A review of mishaps, HMRs and hazreps for this fiscal year reveals some disturbing trends. As our aircraft continue to age, aircrews and maintenance personnel must make exhaustive preflights, phase inspections, pilot monthlies and postflights (yes, they are still required). Some recent incidents that luckily missed being mishaps include TFOAs and missed preflight items.

In the CH-46 community, for example, cracks on an engine's front frame, problems with rotorhead stress risers, and hydraulic, oil and fuel lines rubbing together continue to happen. A good monthly program can be crucial to containing these problems.

I don't know many frog drivers who have not had a fuel, oil or hydraulic line rub or leak down the aircraft. A recent frog Class A mishap may also be in this category.

During preflight, "check line integrity" is often not followed with the attention to detail that is required.

Lessons Learned:

1. Too often we look for the "big-ticket" preflight items and do not pay enough attention to hydraulic, fuel or oil lines. These spaghetti-like critters can ruin our day almost as quickly as slinging a rotorblade.

2. Sometimes our aircrews overlook the importance of secured aircraft accessory panels and fittings; also, they should make sure there's no gear adrift on or about the aircraft. Too often they miss items on preflight or between test flights that have caused or almost caused mishaps. A recent hazrep concerned a flight-test aircrew who forgot to remove the engine intake covers. The turbines overheated during the start sequence.

3. How about those external panel fasteners? Each MAG and wing should have a policy on how many external fasteners can be missing. However, each leading-edge fastener needs to be there. Most of our fixed-wing aircraft have even tighter tolerances for missing fasteners. If more than one fastener is missing, you need to replace them.

4. After the preflight, the aircraft commander must make sure all tools that stay with the aircraft are accounted for and stored. He then needs to conduct a final aircraft walk-around just to double-check for aircraft integrity and missed items. If we follow these procedures, the number of TFOAs and aircraft damage due to missed preflight items can be reduced.

— Maj. Mark Roberts, USMC
Naval Safety Center

Too often we look for the "big-ticket" preflight items and do not pay enough attention to hydraulic, fuel or oil lines.

Lt. Joseph E. Higgins

Edited by Bud Baer. Contributors can contact him at (757) 444-3520 Ext. 7246, (DSN 564).

POP-UPS

HAT to the Rescue ○ Midway Gone Gooney Lick That Envelope ○ TIREsome Problems 215 Malpractice Presentations

Hydraulic Action Team to the Rescue
To solve hydraulic problems in the Hornet, COMSTRKFIGHTWINGLANT at NAS Cecil Field has formed a hydraulic action team (HAT).

By tossing their HAT in the ring, CSFWL helps its squadron members understand and troubleshoot hydraulic problems using the latest directives and maintenance practices.

"The main goal is to demonstrate the only method of eliminating air from the FA-18 hydraulic system," according to one official. "This problem plagues our community. It makes parts fail prematurely, reduces system life and increases maintenance time; it causes most of our hydraulic problems. (See "The Phantom In the Hydraulic System" on page 38.)

"An improved hydraulic jenny with a fluid-air separator may reduce bleed times and needs to be considered. However, until a new system is designed and fielded, we need to take time to eliminate air from the FA-18 with the tools we have at our disposal."

Midway's for the Birds – After an HC-130H took off from Midway Island, the pilot kept the plane near the deck while looking for a clear space to climb in heavy bird traffic. Suddenly a 20-pound Laysan albatross, called a gooney bird, was swallowed up by an engine, which immediately flamed out.

The pilot returned to NAF Midway. After the aircraft touched down at 70 knots while in reverse thrust, another gooney bird crossed its path. The crew heard a loud bang, and their aft observer reported a bird strike on a propeller.

Two strikes and the Coast Guard Hercules was out of commission. Cost of this Class B mishap: engine overhaul $228,235; new prop, $18,000; labor, $3,200. Total cost: $249,435.

Midway, now used primarily as an emergency stop for naval aircraft, is known for its dense bird population. The Navy has operated from Midway for decades and, because of its strategic location, has accepted occasional bird damage as a cost of doing business.

Bird strikes on mid-Pacific islands can be reduced if flight ops and flight crews consider bird behavior and migration schedules. Gooney bird activity is heaviest just after sunrise and in mid-afternoon with a decrease from 1100 to 1300. There's less risk at night.

The cost of this recent incident captured the attention of aviators flying the Pacific. Pilots can improve flying techniques to reduce exposure to bird strikes. They should do so if they don't want an albatross around their neck.

Lick That Envelope Problem – What should a Hornet pilot know about ejecting upon landing with a collapsed nose gear or excessive tailwind? The ejection-seat envelope defined in NATOPS doesn't answer this question.

"Incomplete ejection-envelope data in the NATOPS flight manual may result in death or serious injury when an ejection decision is made based on less-than-complete information," VFA-27 officials noted in a recent hazard report.

VFA-27 submitted a NATOPS change to shed light on this subject, giving envelope data on the SJU-5/6 ejection seat used in FA-18Cs.

Warminster engineers and McDonnell Douglas crew-systems experts worked up the data while investigating the command's earlier hazrep about failures of the proximity switch-arm on the nose gear. They conducted a successful sled-test ejection with a collapsed nose gear (10-degrees nose down, 20 degrees roll).

The experts determined that the aircrew could safely eject with up to 20 knots of tail wind. A limiting factor with any tail wind may be the canopy, they said, which needs to clear the seat trajectory before the seat fires.

A TIREsome Problem – FA-18s and F-14s have had too many nose-tire blowouts during catapults in the Arabian Gulf. Analysts report that "over-deflection caused by under-inflation or overload" was the problem. Over-deflection can occur if a tire is pushed too far sideways.

Nose tires have undergone extreme sidewall deflection, causing internal rupture of the lower sidewall carcass plies and inner liner.

A survey of deck temperatures showed they were 20-50 F higher on the catapult troughs. When tires were serviced to proper inflation on the hot cat tracks, they became under-inflated when cool.

To decrease blowouts on the catapult, nose-tire inflation has been increased 25 psig to 375 psig for Arabian Gulf operations. Nose-tire pressure remains at 350 psig for all other CV operations. Daily inspection of tire pressures should be no less than two hours after the last flight to allow the wheel and tire assembly to cool.

AZCS(AW) Stober Cited for Safety Center Work – RAdm. Frank Dirren, Jr., Naval Safety Center commander, awarded AZCS(AW) Dan Steber, former editorial coordinator for the Crossfeed section of *Approach Mech*, the Meritorious Service Medal for achievements at the Center. AZCS(AW) Steber made 215 maintenance malpractice presentations during his two-and-a-half years at the Center. He transferred on June 1 to CAG-8 maintenance on board USS *John F. Kennedy* (CV 67).

Edited by Bud Baer. Contributors can contact him at (757) 444-3520 Ext. 7246, (DSN 564).

My Wingman Helped

What does crew coordination have to do with those who fly a single-seat aircraft? Plenty! We were scheduled to fly the ultimate sortie off the coast of Bosnia from the ship in support of Operation Deny Flight. The flight lead, Capt. Kevin Farrell, who briefed the sortie, was working up for advanced tactical designations in the AV-8B. A Spanish tanker was also available to support multiple close air support (CAS) missions. Each jet carried two Mk-82 GP bombs, one AIM-9M Sidewinder, and a defensive electronic countermeasures (DECM) pod.

The weather was fair with both air and water temperatures in the high 50s. I was running a little behind, and since dry suits were optional, I elected not to wear mine.

We launched, rendezvoused and headed north toward our air-refueling track 150 miles away. After refueling, we received our tasking and clearance, then turned east into Bosnia. We finished our checklists and prepared to penetrate feet dry into the target area.

Capt. Farrell and Maj. Mattie (author)

Passing over the coast at 17,000 feet, we moved to a combat-spread formation and began to push up the power. Nothing happened! I moved the throttle back and forth with no change in rpm or engine noise. It took me a few seconds to realize I had a serious problem. Although I didn't know it at the time, the throttle-linkage cable had failed. The engine was stuck at 72 percent rpm. I began a slight descent, told lead I was having engine trouble, and turned back to the west. Within seconds, I noticed the rpm decreasing slowly to 70 percent with still no control of the engine.

It was time for a decision.

"Aviate, navigate, communicate. Stick to the basics," I reminded myself. I had lost one of my radios earlier in the flight and hadn't given it much thought until now. I was busy analyzing my engine problem so I relied on lead to navigate and communicate our intentions to the rest of the world. Still in a slight descent to maintain airspeed, I considered landing in Croatia but decided to head west across the Adriatic toward Italy.

By now we were off the coast of Croatia about 120 miles from the nearest divert. I regretted not taking an extra 10 minutes to don my dry suit, since I now faced a possible over-water ejection. I tried not to think about it. I was reviewing emergency procedures for loss of engine control when Capt. Farrell interrupted.

"Sir, I've declared an emergency. Turn right 220 for the divert. We've received clearance to jettison ordnance. Let me know when you're ready to review procedures for loss of engine control, then we'll check the weather."

He had coordinated everything so I could concentrate on flying and continue troubleshooting.

We jettisoned the bombs and dumped fuel, which reduced drag and lowered gross weight to maintain level flight. I felt like a huge weight had been lifted off my shoulders, and I was now confident we could make it to the divert. We were pilots in separate aircraft working as if we were in the same cockpit. Lead read from the EP checklist, and I confirmed each step complete. I selected manual fuel control, and rpm immediately rose 6 percent. However, I still had no control of the engine.

Things had calmed down, and we had a plan. It was another 25 minutes to the divert, and the engine seemed to stabilize at about 70 percent. Lead got the weather for the divert and briefed it as 7,000 broken with 2.5 miles visibility. We reviewed the approach

Me Get Home

by Maj. Chris Mattie, USMC
with Capt. Steve Hagerty, USMC

plates together, and I contacted approach control to request radar vectors for a straight-in.

We began our descent 25 miles from our divert field and noticed the weather looked much worse than briefed. Things were about to get serious once again. Approach reported the radar down. We weren't receiving the TACAN. Imagine that!

I decided I was committed to this field, so I designated the INS waypoint and began the TACAN approach from the INS point. I used nozzles and speed brake to control my descent into a thick undercast. Kevin reminded me of a similar incident where a pilot lost his engine while lowering the nozzles, so I was prepared to eject. I recalled many valuable ready-room briefs that summarized mishap-investigation reports.

Passing 5,000 feet, lead, who was now on my wing, went lost sight and separated from the flight. Now I was alone, still in the weather, and the rpm began decaying again. Capt. Farrell had done a great job getting me this far, and now it was time to earn my flight pay.
I broke out of the clouds around 2,000 feet, 5 miles from the field with rpm down to 60 percent. At 3 miles, I picked up the coastline, and at 2 miles, I had the field in sight. I lined up for a visual straight-in approach, lowered the nozzles, dropped the landing gear, and completed the landing checklist.

I made a variable-nozzle slow landing and managed to land on centerline at 135 KIAS with just over 55 percent rpm and 44 degrees of nozzles. To slow down, I used power-nozzle braking which is essentially reverse thrust using the nozzles. I selected cruise flaps and stopped about halfway down the runway.

I could tell that my main tires were blown and noticed the anti-skid switch was in the nosewheel steering (NWS) position, which deactivates any anti-skid protection, and was the reason my two main tires had blown. [*Having the anti-skid switch in the NWS position is proper procedure for operating around the ship. — Ed.*] The anti-skid switch is not part of the landing checklist. I couldn't shut down the engine using the throttle, so I secured the engine using the fuel shut-off handle. At last — safe on deck.

Looking back, I realize how lucky I was to have a wingman who knew how to apply crew concepts in single-seat aircraft.➤

Maj. Mattie flies with VMA-231, which was part of HMM-264 (REIN) at the time of this story.

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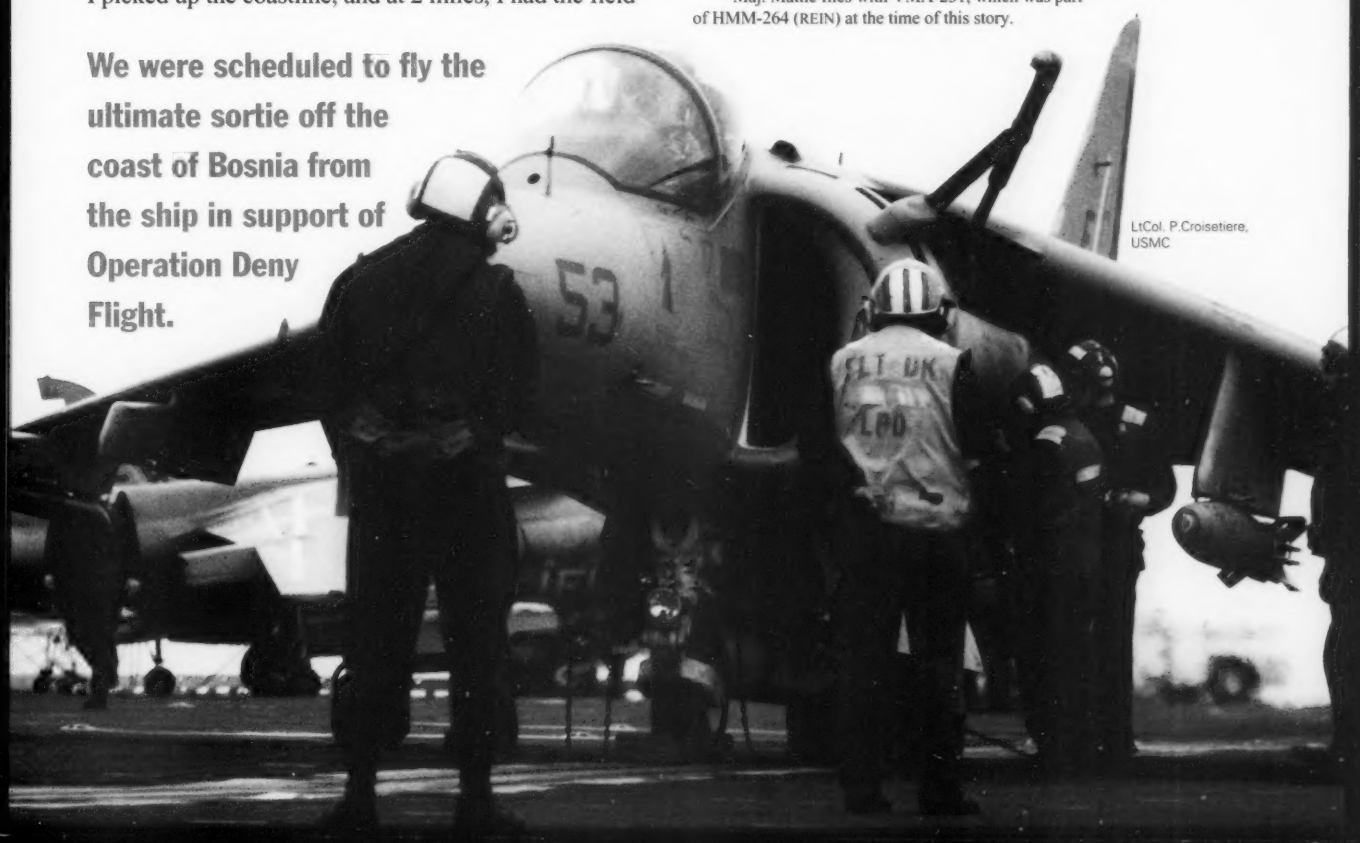


LtCol. P.Croisetiere, USMC

Do You K

My name appeared in every major newspaper across the country in what was perhaps the most scrutinized mishap in naval aviation history. Yet, you may not know me. I was the RIO of "Lion 103," the F-14 that lost its port engine on short final coming on board USS *Abraham Lincoln* in October 1994.

I don't want to rehash the ramifications or political fallout of that day. Instead, I want to recap the events to show why I am alive and to help someone else survive a similar situation.

We launched from NAS Miramar at 1400 and headed to W-291 for CQs. After we checked in and held in marshal for a half-hour, it was time to push. The jet was operating perfectly, and we called in aircraft codes for up and up. We descended through an overcast layer at 2,000 feet and pressed for the break as the wingman. We rolled out wide downwind and corrected with a cut toward the ship, which drove us to a slightly tight (1.0 nm) abeam position at 570 feet, 30 feet low. We agreed to extend off the 180, and I anticipated being a little wrapped up at the start.

We hit the 90 at 450 feet, 300 fpm VSI, and 147 KIAS, with the corresponding yellow donut for a Tomcat in a 30-degree bank, on-speed being 139 knots for our 54,000-pound fighter.

Approaching the 45, I glanced out at the barren flight deck and picked up a cresting high ball. I told my pilot, "We're a little low, eight knots fast."

We held VSI to 400 fpm as we crossed the wake. With approximately 30 degrees to go, I heard a single, barely audible pop behind me. I called the ball as we rolled into the groove with a centered ball.

Over the ICS, I reported, "Five hundred [fpm], five [knots] fast." I scanned the ball, 500 fpm VSI, 140 KIAS, and said, "You're on speed."

A second later, I noticed we were five knots slow and told my pilot. My next scan revealed the ball centered, 10 knots slow. I urgently called, "We're 10 knots slow. Let's get some power on the jet."

The aircraft yawed aggressively and rolled left as we added power. Our descent rate increased dramatically as the bottoms of our seats dropped out. The carrier appeared at our one o'clock as we leveled our wings and the LSOs called for the waveoff. Our descent continued, and I could tell that our flight path would carry us left and slightly below the flight deck. The LSOs called again for the waveoff, followed by several power calls.

The F-14 continued to yaw farther left as the right afterburner staged. The carrier had now drifted to the two o'clock position on the canopy, and our descent slowed. It felt like we would fly away. We were still descending, however, and as I looked at the ship — now at three o'clock — I decided that if we went below the deck, I would eject. At that moment, I felt an aggressive rolloff. I reached for the lower handle with my right hand and pulled.

At the time of ejection, the aircraft was approximately 10-15 degrees nose up, in a 10-degree left bank. I was pulled back into my seat and watched as the canopy rails lit up. The canopy seemed to lift off very slowly and float away. I could see water on both sides of the canopy bow as the nose fell through 40 degrees, and we went through a 70-degree bank.

At 90 degrees AOB, my seat fired, and I felt a rapid forward-tumbling sensation. I heard the roar of the jet as I left the cockpit. With my head pinned forward, I

I decided that if we went

now Me?

by Lt. Matt Klemish

looked between my legs as I tumbled over and over. The seat separated and drifted away, hitting me on the back of my right leg. A stream of gray material appeared between my legs and an instant later, it blossomed into a parachute. I snapped around and splashed into the water.

When I surfaced, my chute was dragging me by the right koch fitting. The SEWARS had failed to detonate. I released the koch by hand and sank back under water. The upper lobes of my LPU had not inflated and held my head up. I struggled to get my head above the water. My helmet, visor, and oxygen mask remained in place throughout the sequence, and my emergency oxygen worked. I tried to fully inflate my LPU by squeezing the lower lobes, but it didn't. (It turned out the LPU's spine had pinched, which kept air from getting to the upper lobes.)

The whole sequence seemed like a bad dream as I turned around and watched the carrier driving away. I saw a light blue area in the water where my F-14 had gone in. The drop tanks also marked the spot, having ripped off on impact. Two other Tomcats circled overhead for a couple of minutes before heading off into the distance.

I was slapped back to reality by a sharp jerk on my right leg. I reached down and felt the spaghetti of parachute line around my leg. Thoughts of water survival filled my head. I freed my right leg and began to scull away. I could see the chute's canopy in front of me. It was filling with water and starting its descent to the bottom. I felt sure I would not be accompanying it until another sharp jerk reminded me that I had two legs.

This entanglement was more complicated than the first because several lines had become caught in my leg-restraint fitting. I was filled with urgency as I unwrapped the lines and threw them out in front of me. I sculled away until I couldn't see the chute, then I checked for more lines.

I looked back at the ship, wondering what would happen next, and reached for my raft release. Thoughts of opening my raft faded as the ship's SH-60 appeared. Minutes later, the helo was overhead and hoisted me out of the water. I was never so happy to fly in a helicopter.

It didn't occur to me that my pilot hadn't survived until I was in the helicopter looking down at the water where our plane hit. A second helo hovered over the area searching in vain for her.

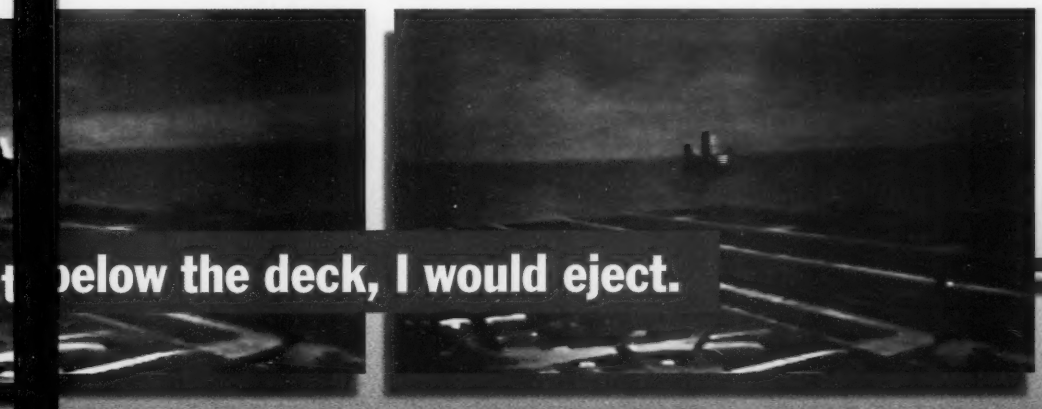
It's hard to decide to jettison an aircraft. No one wants to eject from a perfectly good plane. On the other hand, flight parameters change quickly, and the envelope for safe ejection can disappear in an instant.

Overconfidence can cause mishaps, but we had thoroughly briefed with squadron LSOs and were anxiously anticipating the CQ. We thought we had covered all possible emergencies.

The Tomcat community talks a lot about single-engine procedures off the catapult, but rarely about losing an engine on final. The same rules apply: set 10-degrees pitch attitude not to exceed 14 units AOA. In the landing pattern, you are already above 14 units. Off the abeam, your descent rate may increase rapidly depending on how quickly you recognize the situation and add power. Use 17 units if you must, but no more.

It may seem unnatural to lower your nose toward the water, but you must keep the AOA and airspeed under control if you want to live. ◄

Lt. Klemish flies with VF-213.

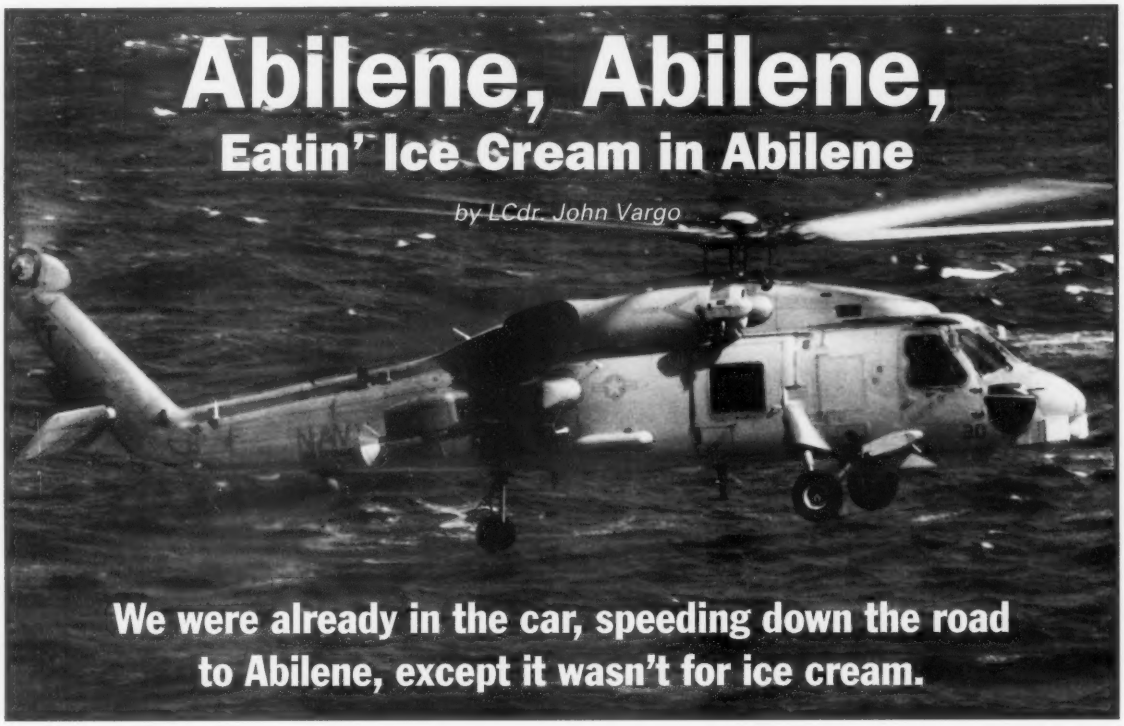


elow the deck, I would eject.

Abilene, Abilene,

Eatin' Ice Cream in Abilene

by LCdr. John Vargo



We were already in the car, speeding down the road to Abilene, except it wasn't for ice cream.

If you have seen the award-winning motivational movie, "The Road to Abilene," you might have associated some of your actions or inactions with the movie's central theme. I did during a recent det flyoff.

I was on my first short cruise as an O-in-C and having a very hard time. The aircraft seemed to develop mechanical malfunctions when we most needed it, the ship's captain was continuously on my back about one thing or another, and there were many personality conflicts between the ship's crew and det personnel. I just wanted to wake up, tap my heels three times, and say, "There's no place like home."

Finally, after one of the longest months of my life, the captain asked me if I would like to fly off the day before returning to port. Why not? The weather was great, the seas calm, and it would get me off the ship one day sooner than planned. But, after seeing the long faces of my det people who were all obviously thinking, "Take me with you," I decided to revert to plan A — fly off just before entering port. I figured the maintenance crew could use the much-needed free time to repair some gripes and have ample time to pack the aircraft for the flyoff. Also, I could avoid choosing who would fly in the aircraft, since the airlift was scheduled to arrive at our home base just a few hours after we did. At the time, I thought I had made the best decision.

As planned, I thoroughly packed the aircraft and briefed with combat and the flight crew the evening before the flyoff. All we needed to do in the morning was preflight and go, all before 0800. You can see where I am headed with this: events normally do not go as planned.

I woke up before sunrise and stepped outside to do a weather check. My jaw hit the deck. The waves were at least five feet, not a problem for us, but the sky conditions were horrible. We had, at most, a

100-foot ceiling and maybe one-quarter mile visibility in rain and fog. It didn't look as though it would get better. I was now faced with a major dilemma: either play it safe and begin procedures to fly off pierside on a weekend, or launch with passengers in the current weather.

I weighed the alternatives and made the most convenient decision. I mistakenly did not include the other crew members and passengers in my decision process. We were already in the car, speeding down the road to Abilene, except it wasn't for ice cream.

We launched 75 miles from the coast and about 250 miles direct from home base. I decided to avoid the beach and fly a direct route beneath the cloud cover. Flying at 150 feet doesn't let you maintain UHF communications or datalink, and we soon were out of range. To my good fortune, the weather gradually got better as we headed south and soon after that, we were in "severe clear." I climbed to 6,000 feet to talk to approach control.

About 50 miles from home, I told my copilot to switch to ATIS and get the latest weather information. I was floored for the second time that day when ATIS said the current conditions were zero-zero. This was impossible since we were only 50 miles from landing and there was not a cloud in the sky. I told him to call Metro to get the "real" weather. To my disappointment, there was no change.

Approach was asking for my desires and hinting at an alternate airfield where I could land. Because the get-home-itis bug had its teeth in me, I asked if I could shoot the PAR at my home field. I had plenty of fuel, and I felt comfortable with my ability to fly the aircraft in any conditions. Without objection from the other crew members, I shot the approach. I intentionally remained slightly below the glide path as I approached "Abilene." At decision height, the controller recited the standard blurb about if I did not have the airfield in sight, execute missed-approach procedures. I said that I had the field in sight (although I must have been dreaming) and continued down the glide path. Of course, because of the many bite marks from the get-home-itis bug, my judgment was clouded. Shortly thereafter, I spotted a familiar road and fenceline, oriented myself to the runway, and was soon crossing the approach end. The fog was so bad, an air taxi to the ramp would have only increased my actual instrument time. We finally made it home only to see the XO standing by with the big welcome home banner and a few questions for me. He asked how the weather was, and my only response was that it was as advertised.

Although I made many errors that severely jeopardized me, the crew, and the two unknowing passengers, not once did the other two crew members question my actions. We didn't see the street signs. After discussing the flight with the aircrew, I found out they too had high expectations of my ability to get them home and did not want to impair my vision. But in retrospect, someone should have questioned the decisions of that day, whether it was to begin the flight or shoot the approach, knowing that I was determined to get home. It would have made me realize that others were concerned about the weather and that flying off pierside was the safest alternative.

Although I made many errors that severely jeopardized me, the flight crew, and the two unknowing passengers... not once did the other two crew members question my actions.

It doesn't hurt to question anyone's judgment, especially when a simple statement such as, "Are you sure you want to do this?" can turn a bad decision into a better one.➤

LCdr. Vargo flies with HSL-48.

"Center, Rescue 12 is declaring an emergency with low fuel!" We were 25 minutes out with about 20 minutes of gas remaining. Standard mishap situation, right? Just another crew who thought it couldn't happen to them and blew off their bingo? Not this time.

At 0345, the SDO had briefed our SAR mission: two fishing boats, out of fuel and adrift, somewhere off the coast of an island roughly 125 nm away from base. Last known position more than 12 hours old. Thirteen people on board. Weather was low overcast, fog, and rain forecast—poor but workable. An auxiliary fuel tank and fuel packet were pre-briefed items for this profile, with refueling to take place at a local airport. The on-scene commander (OSC) would be a Coast Guard cutter.

With first light on station more than two-and-a-half hours away and our night capabilities limited by our aircraft (a CH-46 model with no doppler), we took our time reviewing the ADB and preflighting before taking off at 0525 and heading northeast, passing in and out of clouds. At our en-route altitude, homeplate's TACAN dropped off at 55 miles. At about the same time, we lost comms with departure and switched up the OSC to check in.

After reaching the search area, we descended to 500 feet AGL. It was just starting to get light, but with limited visibility. We decided to orbit at max endurance until conditions improved. While we waited, we discussed our fuel situation. A CH-46D, with an aux tank, is worth about three hours of flight time, not including the 200 pounds per side dictated by NATOPS. With fuel available less than 10 minutes away, we set our bingo at a comfortable 500 pounds per side, 30 minutes en route.

After 20 minutes, with the sun rising and visibility slowly increasing, we began our search, coming down to 300 feet and heading west.

With no TACAN, we had to estimate distances using heading and timing. After 10 miles, we turned to 030 to parallel the islands marking our eastern boundary, which we estimated as 15 miles away. After completing that leg, we turned west again for three miles and then 210. Following our turn to the southwest, we decided that we would head back for fuel after we finished our next northeast leg. We knew that completing the final leg would take us to our bingo, but weren't con-

With the sun rising and visibility slowly increasing, we began our search...

From SAR Asset to SAR Victim (Almost)

by Lt. Thomas W. Carter

cerned since we believed ourselves to be only 25 to 30 miles from the coast.

Midway through our last leg, we contacted the fishing boats and told them we were leaving. They responded by saying they had us in sight. We checked our fuel, about 600 pounds per side, and had them talk us in until we saw them. Once overhead, we dropped a flare, then came around to hoist down a PRC-90, preset to the beacon. With our fuel state rapidly approaching our bingo, we knew we had to hurry, but without the doppler it took several minutes of hovering before we were able to land the radio in the boat. Meanwhile, we gave the cutter a long count to allow them to get a DF fix on our position. At our bingo fuel, 500 pounds per side, we pulled away.

Passing through 1,000 feet MSL at 120 knots, the DME indicator flashed 44 nm and then lost its lock. Startled, we tried to contact center for radar vectors. When we couldn't, we realized we were farther away than we had thought and, at 400 pounds per side, we declared a low-fuel emergency to the FSS. The FSS could do nothing but suggest we contact center, which we did with the help of another aircraft. We again declared an emergency and were instructed to climb to 4,500 feet MSL. We said we would try but were limited by our fuel. Center picked us up at 1,900 feet, 30 miles out. With less than 15 minutes of fuel remaining, we decided to head for an uncontrolled strip on the nearer island.

At 200 pounds per side we were within 10 miles of land, but flameout was imminent. We decided against ditching the aircraft, believing we could make it. We planned to land as soon as we crossed the beach and gave center our intentions. With 175 pounds on one side and 150 pounds on the other side, we crossed the coast and landed in a clearing within 100 yards of the cliff line, shutting down immediately.

Where did we go wrong? We came within five minutes of violating an important tenet of SAR operations: Don't become a SAR yourself! Looking back, I can see where we made three crucial mistakes.

We didn't take on-scene winds into account. Although not extremely strong, the steady 15-to-25-knot wind played a large part in our being 40 to 50 miles out, instead of the 30 we were working around. The wind also critically slowed our groundspeed as we headed for land. This problem was further complicated by our limited navigational capability.

Second, we failed to use all the assets at hand. While center didn't have us on radar, because of our low search altitude, we found out later that the USCG cutter was painting us throughout the flight but never told us. Using their onboard GPS and radar, we (they?) could have pinpointed our position. We completely overlooked this source of information.

Third, and most importantly, we set our bingo and blindly stuck to it. We watched our fuel like hawks throughout the flight and carefully adhered to the limit we had set for ourselves, but never considered setting a new bingo as we moved farther offshore. Bingos are rigid and unchangeable only in the sense that once set, you can't break them. Otherwise, they are as fluid and dynamic as any other part of flying. Look at your bingo as the flight progresses. Ask yourself if it still makes sense in relation to the situation. If it doesn't, change it.◄

Lt. Carter was flying with HC-5 at the time of this story. He is currently assigned to the Atlantic Fleet Weapons Training Facility, Naval Station Roosevelt Roads.

My Hail-I… Low-Le…

by Lt. Norman Metzger

We weaved in and out of developing thunderstorms, staying VFR en route to the target area.

It was my second hop in a fleet A-6 squadron operating out of NAS Oceana. I was lead with the safety officer as my BN, and the operations officer was on my wing. We took off for a low-level through the West Virginia mountains. Although the Dash-1 read clear and a million, with no forecast thunderstorms or precipitation, the weather deteriorated about halfway through the route, and my wingman lost sight.

We climbed through the cloud deck and rendezvoused at the exit point. The worsening conditions should have been our first indication that the forecast was not worth the paper it was printed on. I should have knocked it off before the weather got bad.

We weaved in and out of developing thunderstorms, staying VFR en route to the target area. Our target time was uneventful (broke even on bets).

The off-target rendezvous flexed to a lower altitude because of low ceilings. The join-up went well, and we departed the restricted area for home. We could see there was no way around the line of clouds between us and Oceana. My BN reported that on radar the weather looked like a squall line of rain showers, so we headed straight home to save gas. We found out later that Dash 2's radar didn't work, so they were operating under the join-up-and-shut-up rules.

As we entered the clouds, my BN said we should be through it in about three miles. As soon as he said that, the visibility went to zero in thick clouds and heavy precipitation. Dash-2 called lost sight and took a cut away.

A split-second later, all hell broke loose. It's hard to say how large the hail was since it flattened on the

There were no anti-collision lights left. All of the fiberglass antenna covers were badly damaged... The leading edges of the intakes were destroyed. We felt lucky that both engines had kept running.

windscreen. As usual, the A-6's characteristic radio squeal in weather, combined with the extremely loud noise of hail banging against the windscreen and the moderate-to-severe turbulence added to our problems. As I checked our airspeed, I saw it was close to 300 knots. (An A-6 is supposed to penetrate thunderstorms at 230-280 IAS.) I pulled power.

The nightmare was over as quickly as it started, and we were VFR again. In 20 seconds, we went from good formation flight to lost sight and heavy hail.

We could see some damage to our aircraft, but it flew fine. The flight assumed individual call signs and returned for straight-ins. Our wingman sustained only slight damage, most likely from his cut away at lost sight and immediate reduction in airspeed.

All of this happened within 35 miles of Oceana. When we climbed out of the jet, we could see all of the damage that we couldn't spot from the cockpit. There were no anti-collision lights left. All of the fiberglass antenna covers were badly damaged. The drop tanks looked like someone had taken a ballpeen hammer to them. The biggest concern was the engines. The leading edges of the intakes were destroyed. We felt lucky that both engines had kept running. Fortunately, neither engine had FODed.

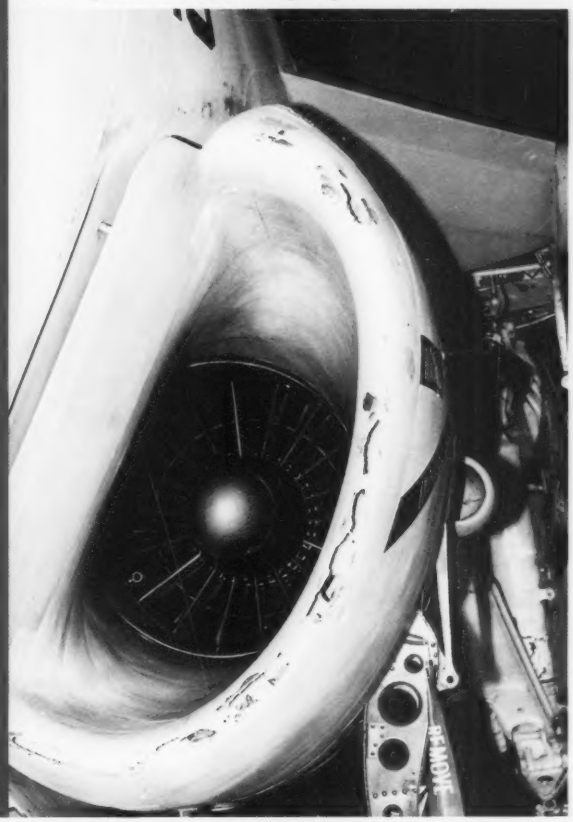
I learned not to push my comfort level trying to hack bad weather. I am thankful that our A-6 Intruder proved to be truly all-weather and stood up to what we put it through.◀

Lt. Metzger flies with VA-75.

You'll probably get away with flying into a small cell, but if you don't get away with it, you risk serious damage. Not a good risk-to-reward ratio.— Ed.

Lens destroyed from belly-mounted anti-collision light.

Damage to intake's leading edge.



The Navy's Ace of Aces (1910-1996)

by Peter Mersky

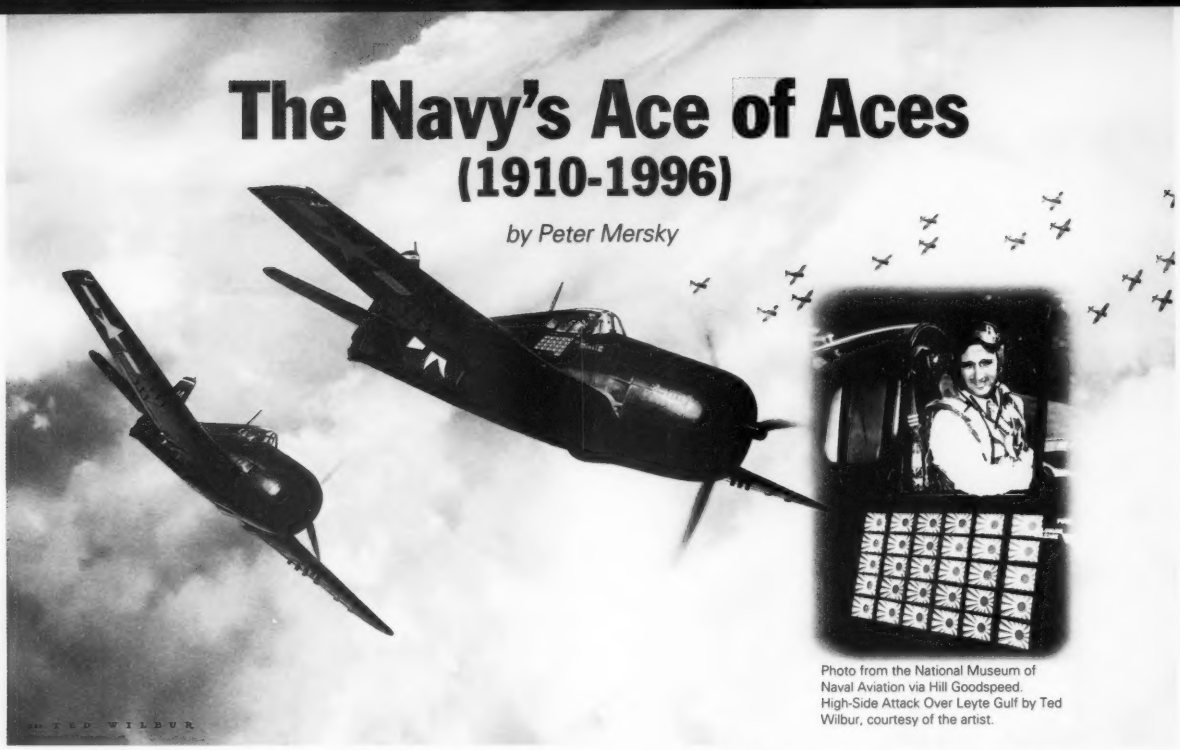


Photo from the National Museum of Naval Aviation via Hill Goodspeed. High-Side Attack Over Leyte Gulf by Ted Wilbur, courtesy of the artist.

His Medal of Honor citation reads, in part:

(He) led his fighter planes against a force of 80 Japanese carrier-based aircraft bearing down on our Fleet on June 19, 1944... (and) personally destroyed seven hostile planes during a single engagement... On October 24, (he) shot down nine Japanese planes and... forced the remainder to abandon their attack before a single aircraft could reach the Fleet...

By the time Commander David McCampbell and his Air Group 15 finished their combat tour in November 1944, he had scored 34 aerial kills in six months, ranking him as the highest-scoring Navy ace, and the fourth-ranked American ace in history (of 1,442 aces from all wars recognized by the American Fighter Aces Association). Not bad for a 34-year-old fighter pilot who had almost missed out on getting into flight training.

Besides his high number of kills, his combat career had several other items of note. He achieved the greatest number of kills in a single mission by an American aviator, and he was the only carrier aviator to receive the Medal of Honor in the last three years of the war. Under his command, CAG-15, embarked in USS *Essex* (CV 9), shot down 313 Japanese aircraft, resulting in 26 aces in the air group. Besides his confirmed kills, Cdr. McCampbell was also credited with seven probables and 21 planes destroyed on the ground.

McCampbell and his squadron participated in the fabled "Marianas Turkey Shoot." Cdr. McCampbell destroyed seven enemy aircraft, five in one mission, to bring his total to nine. However, the new ace's best day came four months later in the Battle of the Philippine Sea.

On October 24, 1944, Cdr. McCampbell led an impromptu interception mission — he was scheduled to lead a strike group an hour later — against incoming Japanese bombers. Originally ordered not to participate in the interception, McCampbell ran for his F6F Hellcat when the bullhorn blared for "all available fighter pilots" to man up. His dark-blue fighter was only three-quarters fueled, but it would have to be enough.

McCampbell led the remaining seven *Essex* fighters off and eventually found the enemy raiders. Diving and arcing through the Pacific sky, the CAG and his wingman, Lt. Roy Rushing, destroyed 15 Japanese aircraft — with McCampbell shooting down nine — using all their ammunition.

On the way home, with only 25 gallons of fuel, puttering along at 130 knots, he managed to divert to USS *Langley* (CVL 27) after being fired on by jittery gunners from another carrier. Cdr. McCampbell received the Medal of Honor for having greatly contributed to protecting the fleet from the large Japanese strike force. Besides the Medal of Honor, Cdr. McCampbell also received the Navy Cross, Silver Star and Distinguished Flying Cross.

He retired as a captain from active duty in 1964 and made his home near West Palm Beach, Florida. He died on June 30, 1996.

Capt. McCampbell didn't care much for the gun cameras of the period and had them taken out of his fighters after the Marianas Turkey Shoot. He told his pilots to do their flight planning in the ready room and not in the air. He also took a great interest in seeing the combat action reports before they went out to the fleet.

Once engaged, he told his pilots to go for the flight leaders and to never follow a victim down. He advocated calculated aggressiveness, mixed with a respect for the enemy; you never knew when you might run into a "real topnotch fighter pilot."

VAdm. Kent L. Lee flew TAD with VF-15 as a young ensign. He later commented, "From the standpoint of a combat leader [McCampbell] didn't have a peer..."

"I've got a helo down here... Get medical help, now!"

by Lt. Kevin Kingery

Whew! Another Fallon det behind me, and only an hour to go before we're back at good ol' Miramar. The early fly-off is definitely the way to go, even if you do have to fly with the CO.

Let's see, we're nearly over LAX. I wonder if I can get Miramar ATIS this far out. I wish I had brought a book. I'm bored. Wait a minute, was that a call on guard?

The skipper and I look at each other as I dial up 243.0.

"Army helo, Black Eagle 603 has you loud and clear."

"Black Eagle, I've got a helo down here. It's pretty smashed up, but the strobes are still flashing."

Oh, boy! Time to re-cage my brain. What did I brief about SAR? Oh, yeah, LINT — locate, intentions, needs, tell.

"Army helo, say your location."

"I'm fighting the fire north of Oxnard. I can see someone moving around down there. Get medical help here now!"

Fighting what fire? And where is Oxnard? OK, let's get the crew going.

"Flight, CICO, we've got a SAR going on radio 4, and I need a freq for Pt. Mugu."

"Skipper, you've got UHF 4."

"RO, start logging everything."

Just where is this guy?

"Skipper, what's his squawk?"

"OK, I've got him."

"Flight, have you got that freq?"

"OK, it's in radio 3."

"Mugu Tower, Black Eagle 603, I'm in contact with an Army helicopter north of Oxnard. He is reporting a downed aircraft and is asking for medical help.

"Black Eagle 603, we've been monitoring your comms and are activating SAR procedures."

Great! We've got the Army helo on IFF, we know he's overhead, needs medical help on scene, and we've told Pt. Mugu. Now what?"

The rescue takes three hours. Five helicopters, four armed services (Army, Navy and USAF, plus Marines on the ground), and an OV-10 from the California Forestry Service take part. All seven people on board the downed aircraft are safe.

The rescue takes three hours. Five helicopters, four armed services (Army, Navy and USAF, plus Marines on the ground), and an OV-10 from the California Forestry Service...

Every SAR is unique, but here are a few of the lessons we learned.

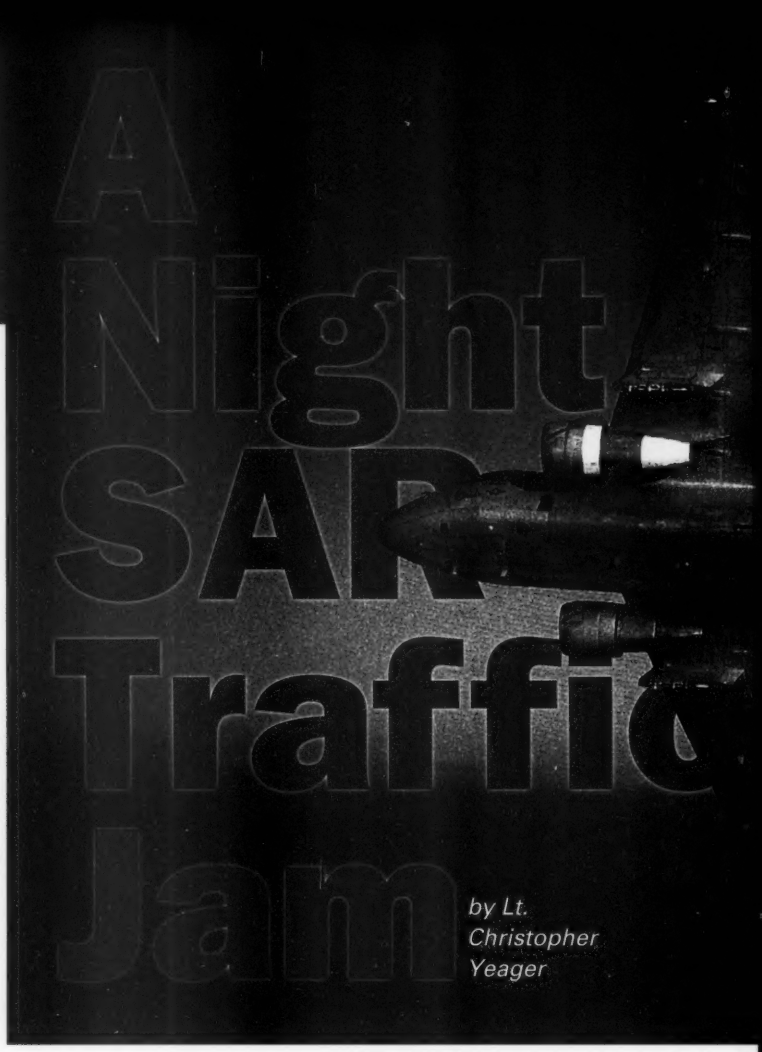
- Get familiar with the terrain — TPCs are great. High altitude and steep terrain prevented the helicopters from landing at the crash site.
- Not all helos are as capable as an SH-60. Of the five choppers in our SAR, only one had a hoist, and none could carry more than two survivors. Also, the Army helicopters were VFR only and could not use a VORTAC.
- The primary consideration for stationing is communications between the SAR site and outside agencies. Once ATC knew we were involved, it was easy to move our aircraft, even in the busy airspace around LAX.
- Come up with a plan and let everyone in on it. Stick to that plan. The on-scene helos expected us to tell them in detail what to do from check-in through pickup.
- Lastly, don't forget to call home and let them know what you're doing — so they don't start a SAR for you.

Maybe you're saying, "That's great, but I don't fly the E-2. How does any of this apply to me?"

Put yourself in our place, but in your aircraft. How would you locate someone with only radio contact and a general idea of where they are? When was the last time you used the ADF, and how reliable is it? Sure, once you find the downed aircraft, your GPS will give you the position to pass on to the FAA, but at your filed TAS, how long will it be before you fly out of communications range with the survivor? Does a Fallon SAREX with NVGs and FLIR prepare you to find a Cessna that ran out of gas over West Texas? ◄

Lt. Kingery flies with VAW-113.

A Night SAR Traffic Jam



by Lt. Christopher Yeager

On the second day of the at-sea period, our air wing was conducting night CQ operations off the east coast of Japan. My S-3 crew and I did a thorough NATOPS brief and discussed what we were going to do during a double-cycle tanker hop, but we didn't include a SAREX.

After a good cat shot, we returned overhead for a package check, then started working the aircraft systems. The systems were all good, and we turned our attention to getting quals. The last of the CQ players recovered, and the Boss directed the plane-guard helos to recover and refuel. Then the ship lost contact with one of the helicopters.

Another helicopter was airborne, so departure directed both of us to try to locate the missing plane. Its last known position was 10 miles south, turning inbound. We immediately began to search the area. I assumed that they were still flying and had gone in the wrong direction. I didn't want to consider that they might be in the water.

It was a clear night, and we could see several small lights within 15 miles. We began investigating with the S-3's FLIR. The first three contacts turned out to be small fishing boats. I remember saying that we had great visibility and that we should be able to see the helicopter if it was within 20 miles. I was still denying the fact that they might be in the water.

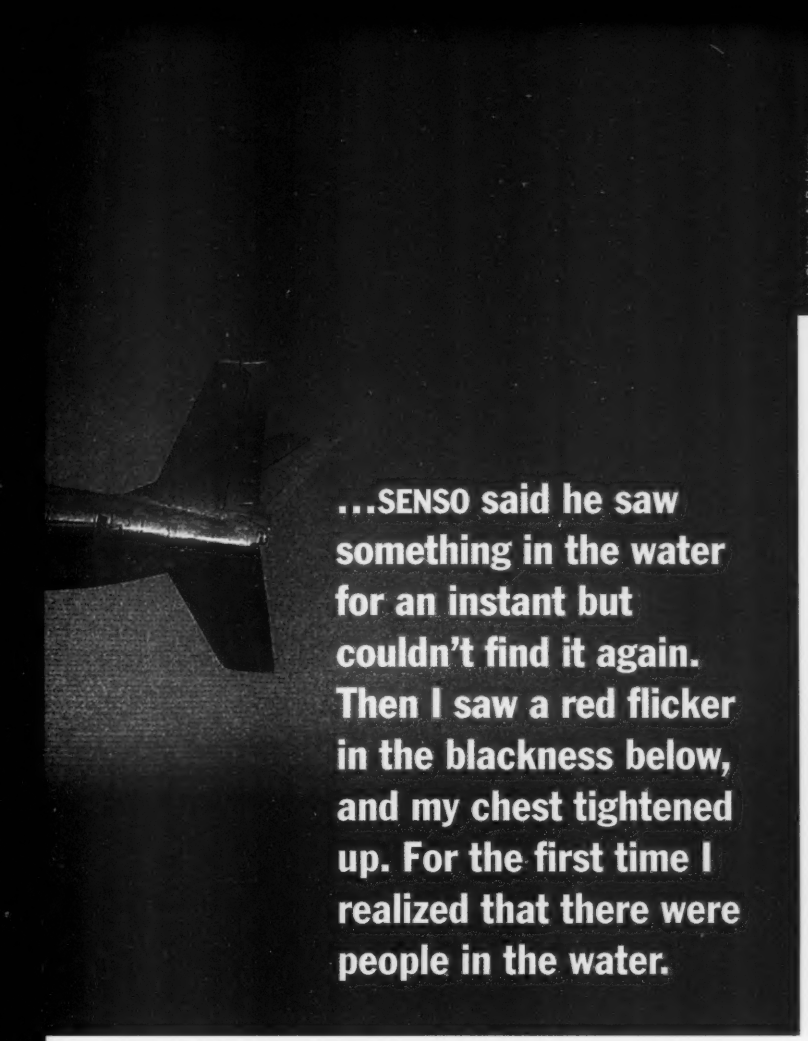
Departure said, "700, we really need you to search around the 190 radial at 10 miles. That was our radar contact."

I looked at that area, but I didn't see anything. I thought that departure must be wrong, but we flew in that direction with the backseaters searching with the FLIR. As I circled in the area of last contact at 2,500 feet, our SENSO said he saw something in the water for an instant but couldn't find it again. Then I saw a red flicker in the blackness below, and my chest tightened up. For the first time, I realized that there were people in the water. I instructed the crew to concentrate the search directly below us as I descended to 1,000 feet in a tight turn.

As soon as I leveled off, the SENSO picked up two helmets in the water just as a pencil flare went off right beneath us. We passed our information to departure, and the SAR helo plucked two survivors out of the water in less than 10 minutes.

The helicopter dropped a smoke to mark the position for us before returning to the carrier to drop off the survivors while we continued to search for the rest of the crew. I was surprised at how quickly the smoke drifted and realized that people and debris would also drift in the current. We took this fact into account and modified our search plan in the direction of the drift.

The comm jam on the radios then began to get out of hand with departure wanting all the information it could get. A surface ship was trying to assume SAR SAC and switch all units to its land-launch frequency. Three more helicopters were checking on station to start searching. During a brief break in the comms, a P-3 pilot said that he



Lt. Christian A. Buhlmann

...SENSO said he saw something in the water for an instant but couldn't find it again. Then I saw a red flicker in the blackness below, and my chest tightened up. For the first time I realized that there were people in the water.

was checking on station at our altitude and received positive clearance from someone. Fortunately, we coordinated an altitude split and avoided each other for the next two hours. We had to stay low enough for our FLIR to be effective but high enough to avoid the helicopters. I was later told that, from the carrier five miles away, it looked like a low-altitude ACM engagement with all of the aircraft lights zipping around. It was a real challenge to stay involved and remain clear of all the air traffic.

Lessons learned? First, we didn't want to accept the fact that the helicopter had crashed at sea. It wasn't until we started seeing flares and helmets in the water that we accepted what had happened. Always assume the worst-case scenario and act accordingly to have the best chance for recovery.

Use your best information. We had been investigating lights that were 10 miles away from the last known radar contact when we should have been searching closer to where departure originally told many of us to look. A helicopter can't get low enough inside 20 miles to be out of the ship's radar horizon. Contrary to what many aviators believe, radar controllers know how to do their jobs.

Optimize your sensors. It wasn't until we descended that we picked up the survivors on FLIR. Helmets and survivors are tiny compared to what we're usually looking at, and the aircraft needs to be as low as possible to have the best chance of detecting something that small. Know your predicted ranges of the day to make the best use of your aircraft.

A SAR is an extremely dynamic event. Everyone wants to help out or know what's going on. This translates into a real comm jam with lots of aircraft circling in a small area, all looking down at the water. There was a sense of urgency in this mission, which made it even more dangerous. Aircrew need to keep their SA at all times to avoid going from a SAR asset to a SAR casualty.

Mission commanders need to fly with and be familiar with the SAR on-scene commander checklist. This will help you take charge of the aircraft and communications under your cognizance until you reach bingo fuel or are relieved by a more capable platform.

Use all your equipment. A strong current makes finding anything in the water difficult. An S-3 with a computer system can switch to tactical navigation and use a smoke to calculate drift rates. It's important to pass an accurate initial lat-long of the survivors, but if you don't know where they are going, you might not be able to find them again if you lose contact.

Aircrews must brief and be ready for a SAR at any time. Planning can greatly improve your reaction time, and just might be the difference between saving someone's life and getting there too late. Brief SAR procedures before every flight as if you were training to help get one of your buddies out of the water. ◄

Lt. Yeager flies with VS-21.

The Weather's OK?

Thanks, FDO!

by Lt. Ken Durbin

Most naval aviators look back on the brief period when they earn their wings and log their first 200 flight hours with fond memories — that is, until they remember the 2,000 hours of "blue-chair" time required to achieve it. I believe it was in January at Whiting that I once spent the better part of seven hours in blue-chair hell waiting for the FDO to decide that the weather had progressed as forecast and that we just weren't going to get the TH-57B solo flight out today.

Finally, at about 1400, the squadron's announcement system blasted out my name as well as the five other helo wannabees to muster at the duty office. I glanced outside and noticed that the conditions had not improved. The overcast was resting at what looked like 600 feet.

I thought, "Good, we've finally been canceled." Wrong. The FDO told us to saddle up. We were to fly our solos at an outlying field and get the 0.8 necessary to call the hop complete.

I asked him if there was something he knew about the weather that we didn't. His answer was delivered in that style only the most obnoxious instructors have mastered. I didn't push it. After all, what did I know? I was just an SNA.

I still couldn't believe we were going. I was paired with an Italian student who spoke English like I spoke Italian...

We six student solos received our brief and aircraft assignments and headed for the line. I still couldn't believe we were going. I was paired with an Italian student who spoke English like I spoke Italian — not very well — so at least I had that going for me. We launched, anyway. Course rules to the outlying field mandated that we proceed at 900 feet MSL, 650 feet AGL. We couldn't climb to 900 feet, so we leveled off just below the overcast at 700 feet MSL, 450 feet AGL. All three of us arrived at the outlying field, but the first aircraft went down upon arrival for fluctuating engine-oil pressure. SOP says that when students solo at an outlying field, there must be a designated observer aircraft in the pattern. It turned out that ours was busy trying to instruct a Fam 2 (that's basic hovering — just keep it in Florida and below 30 feet). Needless to say, this IP was busy keeping his brand new on-wing from hovering him into a tree.

By flip of a coin, the Italian student won the right seat and the first solo. As we taxied in to swap seats, a function that required the weather observer's assistance, we both noted that for the last five minutes in the pattern we couldn't attain 500 feet AGL. I asked the instructor if we were going to ride the bus back to base. He was puzzled. I explained that if the ceiling continued to fall, we'd have little choice, especially since the TH-57B is a VMC bird only. Probably for the first time that day, he looked up.

He voiced a few expletives, told us to wait, climbed up to 500 feet AGL and momentarily disappeared as he finally "observed" the weather. Seconds later, our VHF radio came alive with the call for all aircraft to RTB.

We lifted and prepared ourselves for the brief trip home. Since I was now in the right seat, I made the calls and tried following the other solo aircraft out of the field. But alas, the other aircraft disappeared into the dwindling visibility. I heard Dash 1 call

the first checkpoint, and I knew I would be there moments later, so it should not have been a surprise that I would be asked to hold.

I entered a holding pattern as instructed. On my downwind turn, I entered a cloud at 400 feet AGL. I yelled, "Instruments!" three times before my eyes finally locked onto that cheesy VMC gyro. When we broke out on the outbound leg, I saw the football field at the local junior college. Thinking that this was absolutely crazy, I decided to land there and called for the checklist. Good idea, right? Right. Trouble was that as I started my approach, the controller cleared me out of holding to the next checkpoint. Regrettably, I aborted my approach and proceeded now at 350 feet AGL to the next checkpoint. I was again required to hold and did so. I thought about landing at the parking lot of the Piggly Wiggly supermarket, but before I could, I was cleared to the final checkpoint.

We flew at 250 feet AGL and about 50 KIAS. Flying by the headlights in our faces from the grand afternoon exodus from the base, we found Pt. Igore. I called it and turned to 050 degrees. I had my copilot turn on every light we had. Through the chin bubble I saw the little river that everyone uses to call "one mile."

As we shut down, tower told us the visibility was 1/16 mile.

Tower rogered and then said, "Be advised we do not have you in sight." I acknowledged and passed the same to them. Neither of us could see the field. After what seemed like five minutes of blue-chair time, the numbers for runway 5 broke out. We landed at the numbers and taxied to the first available spot to shut down. As we shut down, tower told us the visibility was 1/16 mile.

Meanwhile back at the squadron duty office, the FDO was engaged with the ops boss in a quaint little jig I like to call "tap dancing." You've probably seen it. It ends with all fingers pointing to the erring and ignorant SNA. Don't get me wrong. I accept full responsibility for the most miserable flight of my career (to date). I learned that if it really gets bad, you put yourself there, and only you can get you out. I also learned that if it gets to be so bad that a precautionary landing is required and you decide to do it, be decisive and follow through.

I feel fortunate that this happened so early in my flying career. I don't plan to find myself in that predicament again. ◄

Lt. Durbin flies with HSL-44.

A Rea Hard Off the Ca

by Cdr. Mark Fox

The Hornet is a remarkably reliable and forgiving airplane, but the margins for error off the catapult remain extremely narrow. Our sister squadron lost an airplane and pilot immediately after a catapult launch in the Adriatic, and I was appointed the senior member of the mishap investigation. The left rudder actuator failed immediately after the catapult launch, causing uncommanded yaw and roll. What irony that I should investigate a mishap caused by the same rudder actuator failure that I had experienced only a few months before! I've wondered if I could have prevented that mishap by spending as much time investigating my incident as I did the subsequent mishap.

I was the typical new XO, on board for less than a month, plunged into the heads, beds and myriad problems that come with a newly deployed squadron.

With all my new responsibilities, flying was the one time I could really leave everything else behind. However, I knew that some of those responsibilities were crowding into briefs and debriefs. I was spending

less time thinking about flying than I ever had before, relying on habit patterns and thought processes developed in previous tours.

Since we were about to enter the Adriatic to support the UN and NATO operations over Bosnia-Herzegovina, we had just changed our Hornets' drop-tank configuration, carrying the two tanks asymmetrically ("double ugly") to unmask the laser/FLIR pod on the left fuselage cheek station. Although well within NATOPS limits, it created a significant asymmetric load. I had flown with the "cockeyed double-bubble" configuration a few times several years earlier, so I did not give the change much thought.

"It's a little squirrely off the cat," I told my JO wingman in the brief, "but nothing unpredictable or too hard to handle. Be sure to trim away from the heavy wing, and don't rush your clearing turn."

Even though the bow cat shot gave me the seat-of-the-pants reassurance that my Hornet was going flying, I selected full afterburner midway down the stroke, just to be sure. However, I got the shock of my life at the end of the cat stroke when the airplane's nose immediately began an uncommanded right yaw. With the distinct sensation of flying sideways, I instinctively applied full left rudder and stick to keep the wings level. The split-second realization that I might have to eject hit me with a surge of adrenaline as I struggled to control the airplane.

So there I was, wrestling with the airplane off the cat. I thought I had lost my right engine, and I started bringing the throttles out of afterburner to minimize the asymmetrical thrust. A quick glance at the engine instruments showed both burners fully staged, so I advanced both throttles back to full afterburner. The thought of losing an engine reminded me of a statement in NATOPS: Use of afterburner on the good engine above on-speed AOA will complicate your control problems, which made me aware of keeping the AOA under control. I am convinced the reason I was able to maintain control of the jet was because I was thinking about maintaining my AOA.

The airplane's yaw was eye-watering. Witnesses on the flight deck later told me they could see the squadron logo and read the airplane's side number on the right vertical tail following the cat stroke. When I finally got it under control, the aircraft was headed 40 degrees right of the BRC, and I hadn't even thought about a clearing turn!

I focused on keeping the velocity vector on the horizon and maintaining wings level. I was going to eject at the first sign of any uncommanded roll or inability to sustain level flight. While controllability was still in doubt, my left hand moved from the throttles to the ejection handle to the emergency jettison button and back again while I tried to decide whether I should eject, jettison the external stores or just hang on. I wound up hanging on, although, in retrospect, I should have jettisoned the external stores.

Any problem that makes you consider ejecting off the catapult is serious enough to pickle the drop tanks.

The yaw gradually decreased as the airplane accelerated, and it quickly became clear that the airplane was controllable. Although I took the cat shot with the FCS [flight-control system] page on the right DDI [digital-data indicator], I wasn't able to determine the source of the yaw (the left rudder failed in the toe-in position) until I was safely airborne. The FCS and RUD OFF cautions finally caught my eye as I climbed away from the water.

"406, you got a problem?" The Boss's question registered as I started to breathe again.

"She's flying, Boss. I've got a problem with my left rudder."

I climbed overhead the ship, checked controllability and reset the X'd-out left rudder without a problem. The airplane handled normally the rest of the flight. Although my heart rate and adrenaline eventually settled down, I decided to take my time and recover with my event — no point in putting myself into a box by rushing back without thoroughly troubleshooting the problem.

After I trapped, the troubleshooters could not determine the cause of the rudder-actuator failure, nor could they make it fail again. An interesting and disquieting footnote is the subsequent engineering investigation conducted on the rudder actuator was inconclusive.

I helped our senior lieutenant (we didn't have a safety officer at the time) fill in the hazrep data; then I put the incident aside in my mind, plunging into the more pressing issue of preparing to fly missions for Provide Promise and Deny Flight over Bosnia-Herzegovina.

What has the Navy done to control this hazard? Although the FCS modification to correct the actuator problem has still not made it to the fleet 18 months later, new off-the-catapult emergency procedures have been designed. But we need to review how we train Hornet pilots to take catapult shots.

Improved simulator training is an obvious solution. I've taken literally dozens (if not hundreds) of cat shots with a failed rudder in both the Cecil Field operational flight trainer (OFT) and the engineering simulator at Patuxent River, but the trainer does not come close to replicating the severity of the yaw I experienced in my incident. The engineering simulator at Pax River better simulated the malfunction, but only a handful of test pilots and mishap investigators have the opportunity to use it.

Also, most cat shots in the OFT are for CQ preparation, with CQ configurations and gross weights — rarely with fleet drop tanks and ordnance.

Finally, the OFT only provides night cat-shot simulation, which is valuable for developing an instrument scan. But we also need simulator training that simulates the day/VMC environment, which accounts for two-thirds of all cat shots. A good daylight simulator would give a chance to observe, train and instill good habits off the catapult, ensuring proper techniques for gear and flap retraction, and clearing turns.

The most critical factor in controlling a Hornet with uncommanded yaw is to control the AOA. Since the airplane is "seeking" 12 degrees AOA off the catapult, you may actually have to very judiciously push forward on the stick to prevent the AOA from rising above the boldface limit of 15 degrees. The AOA limit with more than 12,000 foot-pounds of asymmetric moment is the same 12 degrees the aircraft is seeking off the catapult. In my incident, I was focused on keeping the velocity vector on the horizon (as much of an unload as I could manage 60 feet above the water!) which resulted in peak AOA of just less than 15 degrees — right on the ragged edge of controllability.◄

Any problem that makes you consider ejecting off the catapult is serious enough to pickle the drop tanks.

Cdr. Fox is the CO of VFA-81.

Since this incident, much has been done to improve aircraft handling during flight-control failures. Aircrew education on aircraft anomalies during slow-speed flight, changes to NATOPS post-takeoff and emergency handling procedures, and software change OFP V10.51 were implemented to reduce the effects of flight-control failures.—LCdr. Tom Ganse, FA-18 analyst.

GPCT
SWH225

Shortcut Causes Short Circuit

There were no discrepancies that would have electrocuted someone as long as SOPs were followed. The crew tried to revive the victim by administering CPR and oxygen, but failed.

by Bill Gregory

An E-6A, just received from Boeing, was flying an acceptance check flight. The crew powered up the very-low frequency, power amplifier (VLF PA) to test radio frequencies. The in-flight technician, an AT1, noticed various warning lights flashing on and off and arcing in the VLF PA before it automatically shut down. When the aircraft returned to base, he wrote two MAFs on the VLF PA. He also wrote four action items in the pass-down log for the avionics shop to correct before the next day's flight. Someone in the avionics shop told him the way to fix the VLF PA was to replace a variometer (motor-driven inductor used in impedance matching) in node 2. The AT1 believed the discrepancy to be computer-related and that replacing the variometer would not fix the problem.

He came through the gate the next morning expecting to fly in the new bird again and exercise the VLF PA, but he had been selected for urinalysis. He got another in-flight technician (also an AT1) to replace him for the acceptance flight. He briefed the second technician on the previous flight, the corrective action by the shop and what he thought the problem really was. The second technician did not go to maintenance control to read the MAFs; instead, he went directly to the airplane.

After preflighting the VLF PA, the crew started the engines for internal power. The second in-flight tech assembled his technicians and explained a procedure for troubleshooting that required the PA to be powered with the node doors open. The rest of the technicians, except for an EC-130 IFT in training on the E-6A, were on ICS because of station locations and the noise generated in the compartment.

The trainee had been off duty almost two weeks. He had taught the VLF PA at the replacement-training group for four years. However, his IFT flight-marks were consistently low for PA troubleshooting. He once failed his NATOPS check for IFT on the EC-130 because he had difficulty applying PA systems knowledge to actual troubleshooting.

The in-flight technician told the trainee to make sure he watched each frequency-switching relay move as he brought the PA up to "tune power" and then returned the PA to the standby-ready condition (no power to the nodes).

The troubleshooting began with node 3, progressed to node 2, and then node 1 on the port side. Each time, the in-flight technician powered up the PA for about eight seconds and pulled it back to standby-ready. Then he walked around the front of the PA from the control panel to ask the trainee if the switching relay had moved. Each time, before bringing power up on the PA, he shouted across the top of the PA, "Power coming up."

Node 1 has two switching relays and had to be powered up twice. The trainee said he saw the first relay move. The second time the in-flight technician powered up, the trainee didn't see a relay move and said, "Let's do it again. We'll have another look."

The in-flight technician didn't ask the trainee how he observed the switching relays move in node 1, even though the in-flight technician knew the location of the second relay was impossible to see from outside the compartment. He never saw the trainee getting out or in any of the nodes and the trainee never said to keep power up on the PA while he checked the relay. The in-flight technician assumed the trainee would not enter the nodes without using the grounding sticks to deactivate the interlock and shut down the PA.

The in-flight technician walked around to the control panel and powered-up node 1. As soon as he reached tune power, he heard two loud bangs from node 1, saw smoke and smelled an acrid odor. He secured the PA and went to the port side to investigate. He found the trainee unconscious inside the node on the starboard side of the compartment and a lit flashlight on the deck. The crew administered CPR and 100-percent oxygen but could not revive the trainee.

The trainee had preached safety to fellow technicians. Minutes before the mishap, he told a crewmember to remove his wedding ring because it was a conductor. Yet he was found inside node 1 wearing metal-rim glasses and had two pocket knives, keys and change in his flight suit. He had to intentionally place his arm on the electrode plate of the lower variometer and lean forward to observe the switching relay. It was physically impossible to fall into node 1 and duplicate the burns on the right forearm and back of the head.

There were no discrepancies that would have electrocuted someone if safety procedures had been followed. The trainee intentionally bypassed the safety interlocks for nodes 1, 2 and 3. He forgot that 3.3 kva was applied to components in node 1.

The avionics shop had correctly diagnosed the discrepancies on the PA from the previous day's flight. Replacing the variometer in node 2 corrected the discrepancies noted on the MAFs, but the MAFs couldn't be signed off because only one power cart was available. You need two to power up the PA or else have the aircraft's engines turning. There was no QA inspection or release signature on either MAF.

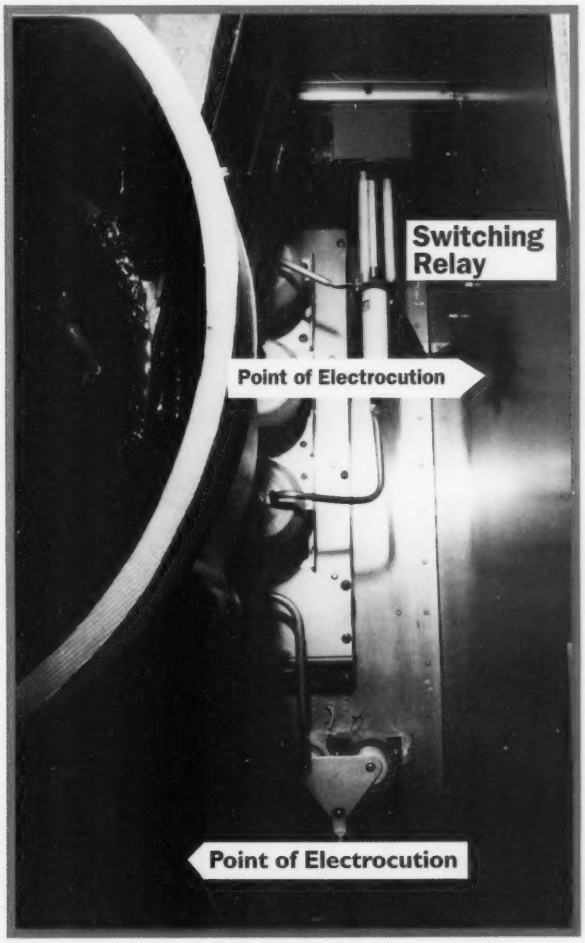
There was a similar death in 1980 when an in-flight technician put his hand in a compartment to point out a cooling system leak. That incident triggered a maintenance instruction by the mishap squadron about troubleshooting the PA. It warned against operating the PA with the doors open and mandated shorting sticks be used before entering a PA compartment.

Investigators recommended a maintenance instruction and/or NATOPS change be adopted. Whenever the doors to the VLF PA system have to be opened with power on the system, the mission commander (in flight), or maintenance control and QA (on the ground), will be briefed before approving the disconnection of safety interlocks.

Also, all technicians working on the VLF PA system in flight or on the ground are to wear ICS headphones and be in contact with the senior in-flight technician. A safety observer will be present on both sides of the PA when troubleshooting with interlocks defeated.

Finally, all aircrew members must meet and brief their responsibilities and actions before preflighting systems. Each lead crewman must review aircraft discrepancies and maintenance write-offs before preflighting the aircraft.

Mr. Gregory is a mishap investigator at the Naval Safety Center.



If the trainee had followed safety procedures, he would not have electrocuted himself. He forgot about the 3.3 kva supplied to components in node 1.

Milestones

Command	Date	Hours	Years
VRC-30	05/06/96	125,000	20
VT-4	06/05/96	29,424	5
VAQ-141	06/29/96	4,000	2
SPU-2	07/01/96	34,175	14
VR-56	07/01/96	93,583	20
VAQ-132	07/05/96	43,500	26
VF-102	07/15/96	49,497	12
VFA-146	07/17/96	45,750	11
VS-33	07/21/96	3,400	1
VA-75	07/23/96	13,800	3

Class A Mishaps

The Navy and Marine Corps had 30 Class A flight, flight related and ground mishaps before 31 May in FY96. The following mishaps have occurred since 17 June:

Aircraft	Date	Command	Fatalities
FA-18C	07/17/96	VFA-86	0

Aircraft diverted after CV ramp strike; departing runway upon final landing.

Class A Flight Mishap Rate

	FY96 to Date		FY95 to Date	
	No.	Rate	No.	Rate
Navy/Marine	30	2.30	27	2.11
All Navy	19	1.95	17	1.79
All Marine	11	3.36	10	3.02
NAVAIRLANT	4	1.47	3	1.17
NAVAIRPAC	9	3.16	11	3.82
MARFORLANT	6	5.36	3	2.67
MARFORPAC	4	2.58	6	3.76
NATRACOM	2	0.75	2	0.75
NAVAIRRES	3	2.59	1	0.95
4th MAW	1	2.92	1	3.07
NAVAIRSYSCOM	1	3.67	0	0.00
Non-MARFOR	0	0.00	0	0.00
OPNAV	0	0.00	0	0.00

Tear out this insert! Post this newsletter until it's old news, then flip it over as a poster.

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(804) 444-3520 ext. 7247 (DSN 564)

The last guy walking here lost a leg.

UNITED STATES NAVY
Readiness Through Safety
NAVAL SAFETY CENTER

What If I Tried to Save Face?

by Lt. John Dixon

I was Dash 2 of a Hornet four-plane scheduled to fly off the ship to MCAS Iwakuni. During the brief, we discussed landing ashore with carrier-pressurized tires, anti-skid failures, go-around criteria, arresting gear and operating procedures ashore.

The mission went smoothly until we prepared to land on Iwakuni's 8,000-foot runway; the weather dictated straight-in approaches. Once detached by my lead, I dirtied up and completed the landing checklist. I double-checked anti-skid on and hook up. I also reviewed my go-around criteria (80 knots at the 4-board).

My lead landed a little long and took it around. I landed just past the threshold, on speed with a normal rate of descent. I extended the speed brake and applied pressure to the brakes at 100 knots.

Just after passing the 4-board, the anti-skid caution came on, so I turned off the anti-skid. I applied pressure to the brakes but felt little response from the aircraft. I was approaching the runway turnoff with a groundspeed of 30-40 knots. I lowered my hook and went past the turnoff. Blowing a tire was now a strong possibility. Dash 3 saw my faster-than-usual end speed and also recommended that I put my hook down to catch the overrun gear.

I pulled the emergency brake handle and applied the brakes as the hook caught the overrun gear. The emergency brakes were not as responsive as I expected. Once stopped, I shut down the engines in the overrun to prevent FODing them.

What if we had not briefed go-around criteria, arresting gear or shore procedures? There is often a subtle letdown when going from ship-to-shore operations. It would have been easy to chance the turnoff at the end of the runway to save face. Maybe the jet would have made the turn, but most likely I would have found myself off the runway with two FODed engines.

How about the temptation to raise the hook and taxi out of the overrun gear to try to save face? This series of events and disastrous results could happen to anyone. Following procedures and using sound judgment are key. I was fortunate to have an excellent brief and real-time crew coordination to back up my decisions.

Lt. Dixon flies with VFA-27.

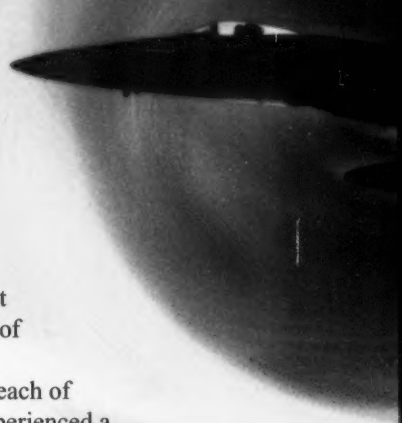
Aircraft Mishap Investigators Needed!

We will have several more openings in the fall and winter of 1996. To qualify you must be an NFO or pilot, Lieutenant Commander or Major, a graduate of the Navy's ASO School, and have department-head experience. For more information call LtCol. Joe Rogish or Mr. Bill Gregory at (757) 444-3520, Ext. 7236 or 7241 (DSN 564).

Some "Au
Illusion

...his jet crashed 30 degrees nose low and wings-level at 540 knots, on the extended centerline...

by LCdr. Tom Ganse



"Now launch the alert fighter!" The not-so-alert pilot shook himself awake and instinctively scrambled to launch at an unlit, remote site. Full afterburner flung him down the dark runway until he aggressively pulled the nose up into the black, moonless night. The aircraft arced through the darkness until, 30 seconds later, it crashed 2.5 miles from the departure end.

Investigators used recorded flight data and ground scars to determine that the pilot achieved a maximum climb angle of 35 degrees before he began a 0-to-0.5-G push through the featureless sky. The aircraft hit the ground 30 degrees nose-low, wings level.

In another incident, a two-seat fighter leapt forward, accelerating down the runway at full power. Once airborne, the pilot hugged the deck, gunning for maximum airspeed. He hauled back on the stick at runway's end, pitching the jet into a steep climb at more than 300 knots. The aircraft quickly penetrated the winter overcast. A few seconds later, the pilot began pushing forward on the stick. The jet scribed a near-perfect parabolic arc through the thick, gray clouds, ending in a smoking hole two miles from the takeoff point.

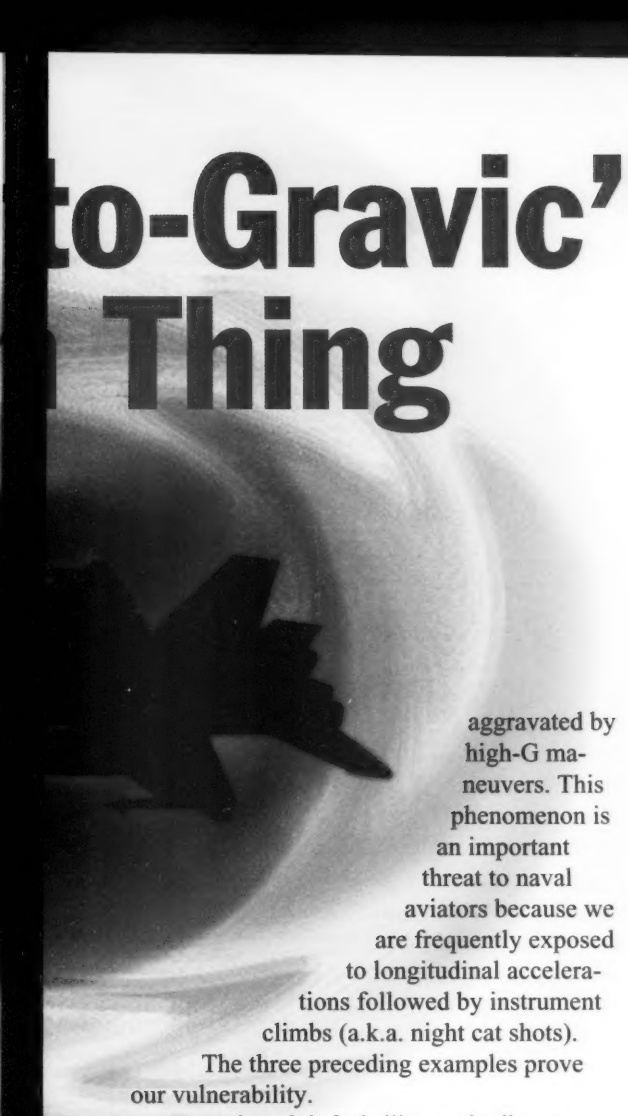
In a third mishap, weather was reported as 300 overcast, tops at 4,500 feet, with visibility at six miles when a demonstration pilot manned his showbird. His maximum-performance takeoff catapulted him to 300 knots under the dense cloud layer before he pulled the stick into his lap. The fighter quickly pitched 45 degrees nose up and rocketed into the overcast. Once in the clouds, the pilot pushed the nose over, maintaining a near-zero-G trajectory until his jet crashed 30 degrees nose low and wings-level at 540 knots, on the extended centerline just past the departure end of the runway.

The pilots in each of these mishaps experienced a sustained acceleration along the longitudinal axis while using outside visual references, followed by a transition to instruments during an acceleration along the vertical axis. They each responded by pushing the stick forward with no regard for the actual horizon — the predictable response for a pilot experiencing somatogravic illusion.

That's a big word for us tactical types. In fact, the first time many of us heard about it, we described it to others as "some auto-gravic illusion thing." Several learned intellects have written about the topic. I'll try to make their research more digestible to the average aviator.

Somatogravic comes from *somato*, meaning "body," or "of the body" and *gravic*, which means "pertaining to gravitational force." Somatogravic illusion occurs when a pilot responds to inner-ear sensations, that is, flies by the seat of the pants. This situation is more likely to occur during a transition from visual references to instrument flight and is

to-Gravic"
Thing



aggravated by high-G maneuvers. This phenomenon is an important threat to naval aviators because we are frequently exposed to longitudinal accelerations followed by instrument climbs (a.k.a. night cat shots). The three preceding examples prove our vulnerability.

Even though it feels like our bodies are being forced down by gravity, we can't distinguish this force vector from a net force vector experienced during accelerations. Pilots can be trained to overcome any disparity between the two by concentrating on, and believing, flight instruments. When you can't suppress the conflict between what your orientation feels like and what your intellect tells you it is, you have vertigo. We are most sensitive to this hazard when transitioning to instruments after losing visual reference. It is much harder to correct perceived orientation by using flight instruments if you are already disoriented, especially in HUD-equipped aircraft.

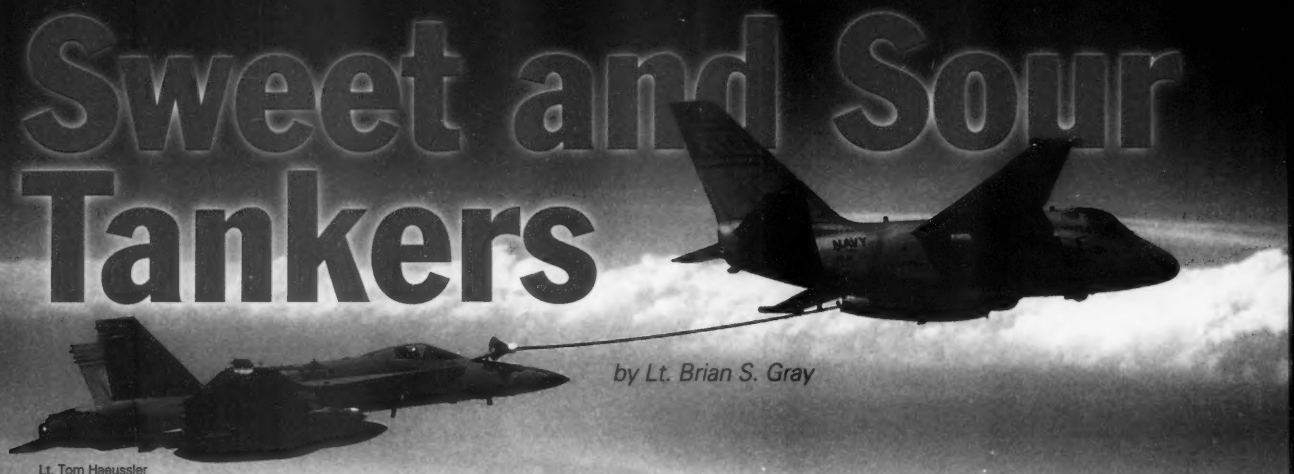
Somatogravic illusion, then, is the fancy term that means your seat-of-the-pants orientation is wrong. This phenomenon occurs because the otoliths of the inner ear tilt back during acceleration, giving you the sense of pitching up. This perception can be overwhelming when you are deprived of outside references, especially if you have not previously established your instrument scan. What makes it so lethal in an accelerating aircraft is that any forward stick input results in further acceleration and an increased sensation of pitch-up. The pilot feels that he needs more forward stick, which further aggravates the situation.

Why don't night catapult launches result in more mishaps from somatogravic illusion? The profile looks very similar at first glance, but there are several important differences. For instance, although the longitudinal acceleration from a cat shot is much stronger than that of a normal launch, it is of a much shorter duration. Another difference is the rotation and initial climb, which is gradual and approximates one-G flight. The most significant differences probably lie in the training and awareness directed at instrument takeoff procedures.

Now that you know that somatogravic illusion exists and how it occurs, you need to know how to recognize and deal with it. Simply stated, you are at risk when you rapidly accelerate and aviate using visual references, then lose those references before establishing an instrument scan exclusive of them. In other words, if you will be performing a high-performance takeoff into instrument meteorological conditions, do it on the gauges. Eliminating the transition from visual references to instruments is the single most important defense against somatogravic illusion.◀

LCdr. Ganse is an A-7 and FA-18 pilot. He is currently a mishap investigator with the Naval Safety Center.

Sweet and Sour Tankers



by Lt. Brian S. Gray

Lt. Tom Haeussler

After a blue-water chaff-ex, we returned overhead as the recovery tanker. We checked sweet, and while we serviced a section of F-14s, I heard another squadron Hoover, 705, check sour on departure. They were supposed to tank a section of Hornets. We had about 9.0 and figured we could help out while still having enough gas for the recovery.

As the FA-18s joined us, 705 told us they had fixed their buddy store. We figured we would tank the Hornets and then sponge some off 705 to make sure we had plenty for the recovery. But 705 couldn't get their store to power up.

About that time, departure asked us to fly out ahead of mother for a weather recce. The weather didn't look that bad, so we wondered what was going on. We sent 705 to do the weather recce since they were sour. We were recovering in 45 minutes, so we decided to take 1.0 from the offgoing A-6 recovery tanker. After tanking, we had about 6.4 and felt like we were good to go until recovery.

"99 Wolfpack." It was the E-2 controller. "Your signal is RTB for weather." We were starting to realize that things had gone to hell.

Next, departure told a KA-6 to set up for recovery.

"Departure, we need to dump 5.0 for max trap."

"Roger that, 510. Take Angels 3. Left to the downwind 120."

"Departure, 510, understand you want us to dump 5.0."

"That's affirm, 510."

There wasn't that much gas in the air, so having a tanker dump didn't sound smart.

"Paddles, 307. I didn't see a thing that time," the skipper of a Hornet squadron said.

"Roger, 307. Next time, use autothrottles, don't overcorrect, and it'll be a sweet pass." My curiosity was rising now. This guy was one of the best in the air wing. The next time around, paddles waved him off.

"307, clean it up. Take angels 15. Say state."

"Roger, angels 15. State 3.5. Say intentions."

After a slight pause, departure came back with solid advice, "307, Your signal is max conserve. Stand by. 701, say state."

"5.3 over 1.5," I answered, figuring we could still give some to 307 if we recovered within a half hour.

"307, expect recovery in 45 minutes. Say state."

"3.2."

At this point, we realized 307 needed gas, and we weren't going to be much help. Departure sent the helo out to do weather recce. The boat hadn't turned yet, although 705 had told them about good weather 15 miles to the southeast 30 minutes before.

"307, Sawbuck 703 is launching in about 20 minutes."

"Roger that."

Next, I heard the Boss call, "703, Tower. Do you have four people on board?"

"That's affirm."

"Is there any way you can offload the two backseaters?"

703 took a minute to answer. "We'd have to shut down No. 2."

Things were really beginning to sink in. (The Boss wanted as few people as possible airborne in case he had to fish them out of the water later.)

"703 airborne."

"Roger, 703, take angels 15. You're cleared to give 307 1.5."

Everyone waited to see if 703 would save the day, as the skipper of the boat kept talking to the helo trying to find good weather.

"Black Knight 612, Panther."

"Go ahead, sir."

"612, Roanoke is reporting ceilings of 200 and vis 1/2 mile on the 090 at 8. Have you recce'd that area yet?"

"No, sir. "

"Well, head out there and check it out."

"307."

"4.2."

"701."

"3.9, dry tanker."

"703."

"Say recovery time."

"Stand by, 703." We realized they still didn't have a plan. Finally, 612 found ceilings of 200 and 1/2 mile visibility, and the boat headed that way.

"703, expect recovery in 45 minutes."

"703, 12.5 over 8. "

More time passed as 612 tried to steer the boat into the "good" weather. 307 burned down to 3.2 again and went to tank. A few more minutes passed before they started bringing us down.

"99, downwind recovery 10 knots." Another bonus. We checked in with approach and they vectored us to final. At 1.2, we went into the goo. The controller did a great job giving course and glideslope information as the pilot flew the needles. At three-quarters of a mile, I looked out and saw nothing. I couldn't even see the water beneath us. At half a mile, I still couldn't see anything. I looked at the needles again. We were on and on at .4 DME.

Next, I heard the Boss call, "703, Tower. Do you have four people on board?"
"That's affirm."
"Is there any way you can offload the two backseaters?"

"99, paddles. When we bring you down, don't bother calling clara or saying anything. It will just delay the turnover from approach to paddles contact. Make sure you have your taxi light on."

More good news to think about. Right about this time, my pilot and I realized the totalizer was reading 500 pounds high.

"Departure, 703's a sweet tanker. 307 plugged and receiving." A little relief went through everyone's mind because now 307, who must have been down to about 2.5, had bought some time.

"703, I'm not showing flow." One word came to everyone's mind.

We started transferring fuel out to our buddystore in case we had to give some to 307 while they launched another tanker. Luckily, 703 recycled and could give gas.

"99, update states when called."

Just as I looked back out, I saw the wake and then the boat, and I heard the pilot say, "I got it."

"Paddles contact. You're high. You're high. DLC." We trapped. We were at idle the whole way, but we only had 2.4 and 10 knots over the deck. Everybody trapped on their next pass.

I'm sure everyone has a story like this, but I realized that day how fast things can go bad. Case I became zero-zero in a hurry. It took an experience like this to drive home what everyone said about fuel being so critical at the boat. ◄

Lt. Gray flies with VS-35.

We're Going Over

Just before I turned in after another arduous but successful tour as SDO, I glanced at the next day's flight schedule. I was a spare for the first event. The brief was at 0345 — bummer — but the rest sounded great, a Harpoon missile chase, not your typical AIC or SSC.

The ASDO woke me at 0330. I got into my flight suit and took the obligatory look in the mirror before heading to brief as the all-important spare.

Both go-birds were up and launched, so I went down to WR 1 for my first breakfast of this underway period. Then, we briefed for the missile chase. Same crew, same man-up, only this time, the sun was up. I had been crewed with my pilot for about the last two-and-a-half months. We worked well together, plus we were both first-tour, cruise-experienced vets. We knew everything about everything.

The first few times we had flown together, we briefed crew-coordination items such as lost brakes on the flight deck, end speeds off the cat, and aircraft leaving the flight deck. We also discussed certain areas of the flight deck where we would be committed to a ground egress instead of ejection because of ejection-seat trajectories.

We slowly taxied behind a Hornet waiting behind cat 3 on our way to cat 4. I spotted a couple of green-shirts working on a crossdeck-pendant riser our burner cans would eventually be over if we were positioned behind cat 4. Our wingman was set up on that catapult, and we would be number two off the same cat.

The yellowshirt did a masterful job of threading the needle with our aircraft between the Hornet behind cat 3 and deck crew working party. When he stopped us, however, I could feel the exhaust of the Hornet on our horizontal and vertical tails. It looked awfully close to me.

At about that time, our director also felt it was a problem and elected to taxi us forward a few feet. Problem solved, but a new one arose. Now our nose cone was in our wingman's exhaust on cat 4. All we needed to do was angle right, and geometry would do the rest (and I thought I'd never use it past high school).

Almost immediately, the A-6 on cat 3 launched, and the Hornet began to taxi toward cat 3. At this point, our wingman on cat 4 taxied forward slightly, and I padlocked his nozzles. The right nozzle closed only momentarily as he added power to taxi forward, but this extra exhaust buffeted our jet substantially (we were only 25 feet behind him at a 90-degree angle). I told my nose-gunner we would be in trouble if our wingee took tension. But he told me our director also realized this problem because he saw him trying to convey this fact — successfully, or so we thought — to the boys running the show on cat 4. OK, problem solved, now what was our vector to station off the cat?

What was that noise? TF-30s spooling to mil! Right away, I knew we were in the hurt locker. Our wingee was in tension. My first instinct was to transmit, "Turn us!" and maybe we had a prayer of using geometry to get out of this jam. No way. We had begun our slide for life with our nose being shoved by 20,000 pounds of thrust. With my voice rising slightly, I quickly called, "Suspend, suspend!" The Air Boss calmly responded, "You're suspended," assuming the problem child was our No. 2 on cat 4 in tension.

My voice was now at fever pitch and frantic, as I announced that we were getting blown toward the scupper, and in a last-ditch effort, I babbled, "Power off, power off!" I knew it was the only way we might stop our out-of-control jet on a slippery flight deck. I knew my pilot was busy doing all he could to salvage an impossible situation. I shifted my attention to the scupper that was rapidly approaching on our left. I had no doubt that our nosewheel had an imminent date with it. I decided if it hit and the airplane stayed on deck, we'd ride it out, but if it jumped the scupper we'd give this one back to the taxpayers.

We hit the scupper a bit more violently then I thought we would, and pitched up slightly before entering an unbriefed dive pattern. The nose began to fall, and having figured we had enough smack to clear the cat walk, I pulled the lower ejection handle as hard as I could.

the Edge!

by Lt. Rich Byrnes

The explosion of the canopy leaving the jet startled me, then I blacked out for a second under the incredible upward acceleration. I felt I was tumbling, then almost immediately, I saw orange and white above me. Good chute. I knew I was OK, and my only concern was to find my pilot, who was already in the water. His chute opened about the same time as he hit the water.

I hit the water in what seemed like one or two seconds (six seconds of actual chute time). I remembered IROK, but too late — SEAWARS popped, and the FLU-8 auto-inflated. I watched the huge carrier steaming right by me, with our jet's nose sitting in the catwalk.

I saw my pilot about 100 feet away, and through hand signals we discovered we were both OK as mom sailed farther and farther away. Two SAR helos were overhead almost immediately and had us both back on the deck where we had been only 20 minutes before.

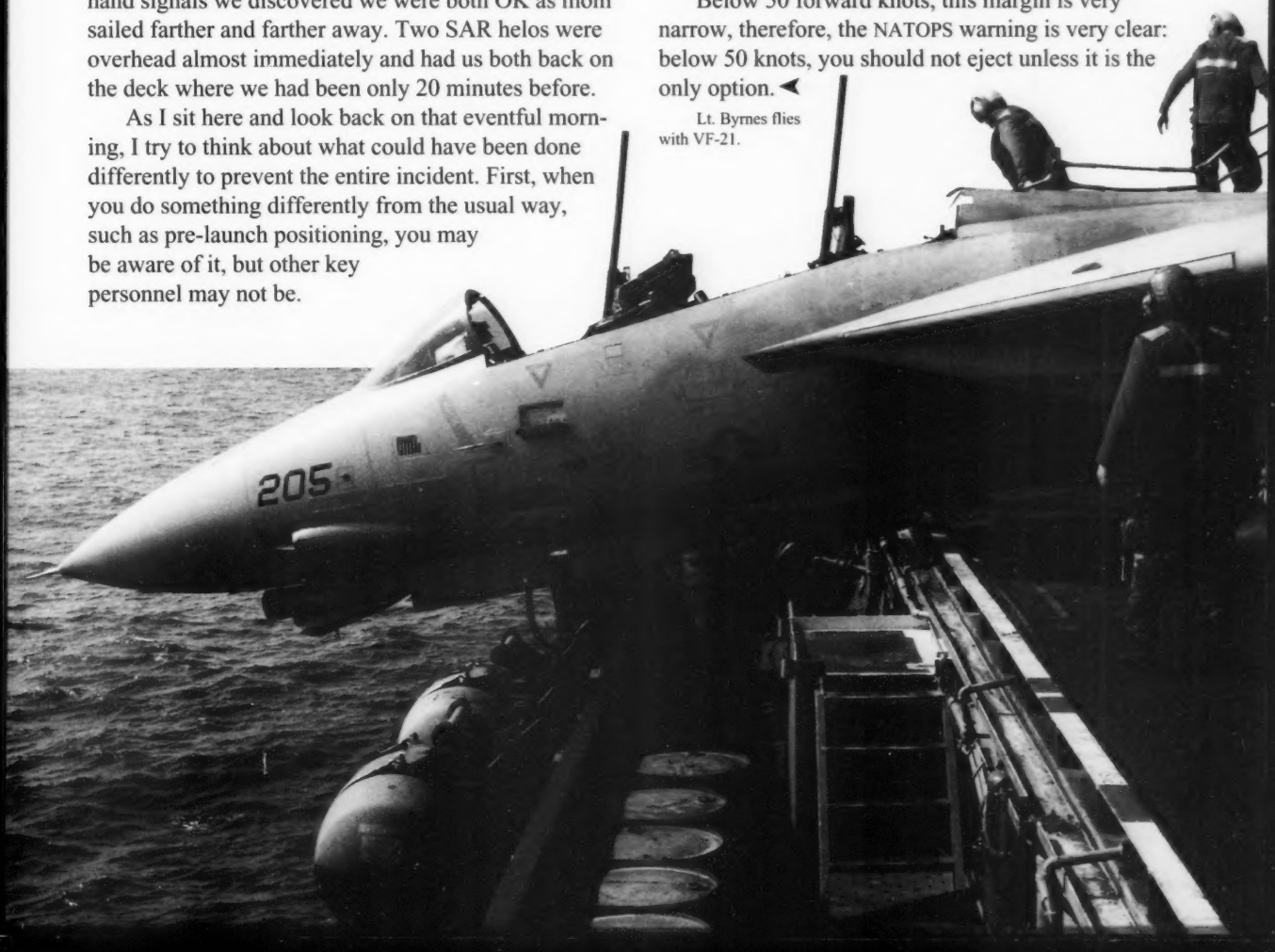
As I sit here and look back on that eventful morning, I try to think about what could have been done differently to prevent the entire incident. First, when you do something differently from the usual way, such as pre-launch positioning, you may be aware of it, but other key personnel may not be.

Second, I've always been aware of the dangers of taxiing on the flight deck, but sometimes we feel like the cockpit is a safe little haven. Know your personal ejection criteria, and stick to them. We all know the consequences of staying with the aircraft too long. In my case, I was convinced we were headed for the water, which certainly met my criteria for getting out.

In your ready rooms, discuss what you would do in this situation and refer to your NATOPS for different scenarios. In the F-14A, the Martin Baker GRU-7A seat was designed to eject a crew member weighing no more than 255 pounds at zero-zero conditions. For the record, I weigh approximately 200 pounds with full survival gear, and my pilot was approximately 265 pounds.

Below 50 forward knots, this margin is very narrow, therefore, the NATOPS warning is very clear: below 50 knots, you should not eject unless it is the only option. ➤

Lt. Byrnes flies with VF-21.



BRAVO ZULU

BZs require an endorsement from the nominating squadron's CO and the appropriate CAG, wing commander or MAG commander. In the case of helo dets, the CO of the ship will suffice. A 5-by-7-inch photo of the crew by a squadron aircraft should also accompany the BZ nomination. Please include a squadron telephone number so we can call with questions.

LCdr. Skidmore, Lt. Garcia and Lt. Larmon

VAW-124

LCdr. Chad Skidmore
Lt. Robert Garcia
Lt. Danny Larmon

The crew of Bear 602 had just completed pattern work at Charleston AFB and was leveling off at FL 180 for their trip back to NAS Norfolk. Lt. Garcia (CICO) saw sparks and smoke coming from the circuit-breaker panel just forward of his position. At the same time, the pilots saw some of their navigation lights flashing.

After Lt. Garcia told the pilots about the fire, the crew started NATOPS emergency procedures for electrical fires. By quickly securing both electrical generators, LCdr. Skidmore (CAPC) removed power from the affected area, which brought the fire under control.

Lt. Larmon (copilot) turned the aircraft back toward Charleston AFB, as LCdr. Skidmore declared an emergency. On the approach, Lt. Garcia extinguished the fire with a portable fire extinguisher. Ten minutes after Lt. Garcia first saw the fire, Lt. Larmon landed.

Postflight showed severe fire damage to several wire bundles, the fire wall, and the fuselage. Despite the brevity of the fire, several holes were burned completely through the E-2's fuselage.

Capt. Kopel, Sgt. Dmitruchina, and Capt. Dickey

HMM-265

Capt. Craig Kopel, USMC
Capt. Larry Dickey, USMC
Sgt. Nick Dmitruchina, USMC

The crew of Dragon 03 had just finished 45 minutes of DLQs on board USS *Dubuque* (LPD 8). As they transitioned to forward flight after their last bounce, the master caution light and the No. 2 fuel boost-pump light illuminated, and the No. 2 engine immediately failed.

Capt. Kopel (PAC) began NATOPS procedures for single-engine operation and traded what little altitude he had for single-engine airspeed. Sgt. Dmitruchina (crew chief) quickly positioned himself in the tunnel to help the pilots and confirm engine failure. With the pilots' OK, he secured the power-management system (PMS).

As the No. 1 engine picked up the load, the rotor rpm continued to decay. The low-altitude warning (set at 75 feet) sounded, and Capt. Dickey (HAC) took control and continued the recovery. As the Sea Knight approached ground effect, Capt. Dickey continued milking the collective to maintain rotor rpm. The aircraft leveled off at 50 feet, and Capt. Dickey slowly gained altitude while Capt. Kopel and Sgt. Dmitruchina confirmed that all NATOPS procedures were complete.

Dubuque provided pigeons to MCAS Futenma, the nearest landing field ashore, and Capt. Dickey landed the CH-46E on the duty runway. Extensive troubleshooting and test flights could not explain the engine failure and caution lights.

HSL-45, Det 1

Lt. Brian Hoyt
Lt. Rick Arias
AW3 Erik Berardi

Lt. Hoyt, Lt. Arias, and AW3 Berardi

The crew of Lonewolf 56, embarked in USS *Ford* (FFG 54), was flying in a battlegroup undersea-warfare exercise. The ship had vectored the Seahawk 50 miles to investigate a possible contact.

While preparing to prosecute the contact, the No. 2 engine's fuel-pressure caution light came on. As Lt. Arias (copilot) tried moving the fuel selector from direct to crossfeed, the engine flamed out. Lt. Hoyt (HAC) immediately went through procedures for single-engine failure while his copilot jettisoned stores. The crew tried twice to restart the engine without success.

The crew turned toward their ship as AW3 Berardi (sensor operator) provided radar vectors. *Ford* closed the aircraft's position at maximum speed, set emergency flight quarters, and vectored another SH-60F to provide SAR services if needed.

As they came to within five miles of the ship, Lt. Arias jettisoned fuel. Then Lt. Hoyt made a single-engine approach and landed.

HMM-166

Capt. Curt Charles, USMC
Capt. John Mee, USMC
Sgt. Duane Breaux, USMC

Capt. Mee, Sgt. Breaux and Capt. Charles

During a local training flight with nine passengers, this crew lost power in the No. 2 engine. Torque, Ng and T-5 instrument readings dropped to zero. Capt. Charles (PAC) began immediate-action procedures for single-engine conditions and set up for a landing while wearing his AR-5 mask. (The training flight had been a nuclear, biological and chemical survey.) Capt. Mee backed up Capt. Charles and prepared the cockpit and cabin.

As the helicopter rolled onto final approach, torque indications for the No. 2 engine began fluctuating. Sgt. Breaux (crew chief) suggested securing the engine. Capt. Charles landed, still wearing his AR-5.

A postflight inspection revealed FOD at the first- and second-stage stator vanes.

BRAVO ZULU

AMS1 Emanuel Rivas
VAW-117

AMS1 Rivas did an operational check of the elevators on an E-2C after his shop installed a new elevator actuator. He noticed the port and starboard elevators were out of rig by 0.6 degrees. After several attempts to re-rig the elevators, he checked the power-system pushrods of a second aircraft and confirmed that the first aircraft's pushrods were installed correctly. He then measured the elevator rig-pan brackets and compared them to the second aircraft. The first aircraft's brackets had been installed backwards.

AMS1 Rivas corrected the installation and re-rigged the elevator in accordance with the MIMs. A review of the aircraft's maintenance records revealed that the brackets had been installed incorrectly at the factory.

PH2 Segisi

AE3 Jack Green
VRC-30

A COD trapped aboard USS *Abraham Lincoln* (CVN 72). With wings up and locked selected, the pilot secured the engines. AE3 Green, an in-flight PC, left the back of the aircraft through the ramp.

With no hydraulic power on the aircraft, AE3 Green saw the starboard wing falling toward the turning propeller of the aircraft next door. He immediately grabbed the wing to prevent it from sliding further and signaled the other aircraft to secure that engine.

AE3 Green's quick reaction averted major aircraft damage and probable injury to people working on the flight deck.

AMH3 Brian K. Rempe
NAS Pensacola

AMH3 Rempe found a broken casing bolt on the primary hydraulic pump during the daily inspection of a UH-3H. This is a rare discrepancy. Had it gone unnoticed, the aircraft could have lost primary flight-control hydraulics.

ADC Joseph Klipple
VP-65

While preflighting a P-3C, flight engineer ADC Klipple heard a faint hissing noise from the overhead of the port wheelwell. Suspecting a leak in the air-conditioning system, Chief Klipple traced the hissing noise to a hole the size of a dime on top of an elbow duct just inboard of the firewall shutoff valve on No. 2 engine-driven compressor.

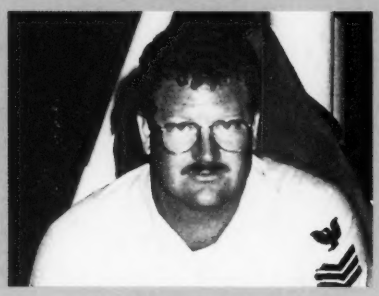
Chief Klipple prevented the wing-plenum area from getting too hot in flight, which averted an in-flight emergency.

PHAN Gary S. Amerine

AD2 Steven D. Garcia
VAW-125

An E-2C was being refueled hot one night aboard USS *Enterprise* (CVN 65). A purpleshirt standing inboard of the secured starboard engine dropped his fuel-sample jar. As the jar rolled under the fuselage, it was caught in the vortices created by the turning port propeller.

The grape got down on his hands and knees and crawled under the aircraft. Intent on catching up with the jar, he didn't realize he was under a turning propeller. Just as he tried to stand up in the prop arc, AD2 Garcia, a troubleshooter, grabbed him and pulled him to the deck. The grape came within an inch and a split second of certain death.



AMH1 Dan Lindsey
VP-64

After a fuel-cell repair on an Orion, AMH1 Lindsey supervised the reinstallation of the port mainmount. As he helped maneuver the mainmount into position, he noticed a slight lateral movement when he pushed on the outboard tire. He stopped the installation and removed the dust cover that protects the wheel bearing. The top key to the axle nut was not engaged, and the nut had backed off more than three turns.

If he had not noticed the movement, reinstallation and the aircraft's weight on the mainmount would have hidden the discrepancy by preventing lateral movement. AMH1 Lindsey averted an emergency that would have happened during takeoff or landing.

AME2 Richard W. Rommel
VAQ-209

Final-checking a Prowler for a launch, AME2 Rommel discovered a two-inch crack in the port MLG's actuator-retract bracket. The position of the crack made it difficult to see.

Petty Officer Rommel told the PC the aircraft was down, thus aborting the launch. He reported his find to maintenance control and inspected the other squadron aircraft.

Had the Prowler launched, the port MLG could have been damaged enough to prevent extension by any means. AME2 Rommel prevented a possible in-flight emergency.

AD2 Ernesto Orive
VP-8

AD2 Orive was doing a CDI inspection on No. 2 engine of a P-3C when he noticed a bolt protruding from a small drain hole. He investigated by removing an access panel to inspect the oil cooler's mounting hardware. He found nine of 12 bolts missing and the remaining three only finger tight.

He inspected the engine for FOD and found one of the missing bolts. He installed new hardware on the cooler, and maintenance control returned the Orion to service. AD2 Orive prevented an in-flight emergency.

AE1 Robert Savela
VS-30

VS-30 hosted a sister squadron that was doing the last of its FCLPs in preparation to deploy. During a night hot-switch, a crew reported their bird down for lack of external lights. AE1 Savela troubleshot the problem and determined it to be a broken wire in the throttle quadrant.

The aircraft taxied to a parking spot and shut down. The crew left the aircraft and proceeded to debrief the troubleshooters. The PC signaled a fire on No. 1 engine. Petty Officer Savela climbed in the aircraft, started the APU and windmilled the engine to extinguish the fire.

AE1 Savela was awarded the Navy and Marine Corps Achievement Medal.

Cpl. David J. Soriano (right)
and Cpl. Ladessa H. Reed
VMA-231

Cpl. Soriano was doing an airframes daily inspection when he noticed fuel dripping from the Harrier's port wing tip. He and Cpl. Reed determined the leak was coming from under the wing where it mated to the fuselage.

With help, they removed the wing and discovered a small hole in the overheated titanium heat shield under the wing. They removed the warped and discolored heat shield and found the composite wing-fuel cell, above the hole in the heat shield, charred and blistered. They had found the leak; now their job shifted to finding the heat source.

Inspecting the top of the engine, they found turbine-bleed air had been leaking from the twelve-o'clock borescope ports. Had this discrepancy gone undetected, fuel dripping onto the engine would have eventually caught fire.

AT3 Kelly Berggren
VR-57

AT3 Berggren, a member of a C-9B phase team, was inspecting the electrical and engineering compartment when she noticed the port brake-control cable was about two inches lower than normal. This is one of 69 cables that pass through the E and E compartment and are not required to be inspected during a phase-D inspection.

Looking closer, she saw that corrosion had severed the cable from the brake-control valve. She told maintenance control. Inspecting the rest of the squadron's aircraft revealed similar damage on two other brake-control cables. The faulty cables were replaced before the next launch.

AT3 Berggren prevented at least one brake failure and possible ground mishap.

First Day on the Job

by AME2 John Borella

Even though it isn't expressly forbidden in print, getting on or off an EA-6B without opening the canopies is not a safe practice. You have to stick to the skin of the aircraft like a bug on a windshield.

I was fresh out of AME "A" school and new to my first squadron. My supervisor pencil-whipped my checkout on ejection seats and egress systems instead of giving me hands-on training. The indoctrination would have taught me how to operate the canopies and how to get on and off the EA-6B.

My supervisor told me to work off corrosion inside a panel on top of the fuselage of one of our Prowlers. He pointed out the panel, gave me all the equipment I needed to do the job, and sent me on my way.

As I approached the aircraft, I saw both canopies were closed and realized I didn't have a clue how to open them. Believing my supervisor trusted me and had faith in my abilities, I decided I could figure out how to do such simple tasks as opening a canopy and climbing on an aircraft. After all, I was an AME. I wasn't about to ask for instructions on how to operate one of my own systems.

I'd seen plane captains climbing around aircraft with the canopies closed, so that was the method I chose. After climbing the boarding ladder and getting on top of the aircraft, I concentrated on the job at hand, forgetting about my previous dilemmas.

I was working in a small area. To get my head into that confined space, I removed my cranial, which made sense to me at the time. After finishing my task, it was time to get off the aircraft. At that same instant, a thought occurred to me: "How do I get down?"

I looked at my options, which were very few. I decided that my first move would be to put my cranial back on and secure it. This would turn out to be the best decision I'd made.

The way I got up on the aircraft seemed to be the best bet for getting down, so I tried it. Seconds later, I was on the ground and surrounded by my new squadronmates who told me that an ambulance was on the way.

The results of my poorly executed dismount were one HGU-25 cranial cracked in half and thrown away (it did its job), two broken fingers, one cracked tailbone, one AMEAA temporarily out of service, and a rather large bruise to my ego. I'm thankful that I had the sense to put my cranial back on.

After several years of looking back on this incident, I can pinpoint some important lessons: When training doesn't happen or is ineffective, your safety program will fail. Before you send new people out to work, make sure they are trained in all aspects of the job. Then review SOP and hazards periodically, because once in awhile, those points get ignored in the press of business. ◄

AME2 Borella is assigned to VAQ-131 QA.

Saved by a Thread

by Maj. Peyton DeHart, USMCR

The thread was attached to one of Sgt. Jason Allen's flight gloves. He was doing a daily/turnaround inspection on an AH-1W on a cold day.

Aircraft inspection, while primarily a visual task, can involve all the senses. You feel surface irregularities and dents in what should be smooth metal. You smell the faint odor of burnt (as opposed to heated) oil and grease. It's harder to pick up than the ozone-charged air that wafts around an electrical overload. The smell of burnt wire is distinctive, hard to overlook. Only hearing, so important for picking up changes in pitch and the whine of pumps, isn't part of a preflight.

The helicopter was just a few months old with only 100 hours on the airframe. Looking at parts that don't break on a brand-new aircraft; what could be easier — or more dull? Sgt. Allen had come to one of the hanger bearings that support the five hollow tubes of the tail-rotor drive shaft, which run down the tail boom. The bearing is a connector and flex point on the drive shaft from the transmission to the tail rotor. It sits on top of the tail boom between shoulder and eye level. Opening the cover exposes one side for inspection, but the back side is still hidden.

Sgt. Allen's gloved hand patted the drive shaft, felt its smooth, cold metal and detected no dents. Every few feet, he ran into another bright shiny hanger bearing. He placed his fingertips on the golden conical metal that stuck out from the front of the bearing, checking for grease. He rubbed the front, then reached over to get the other side. As he pulled his hand away, he felt the faintest tug at his fingertip and stopped. He looked at his hand trying to figure out what was holding him back.

One thread.

A thread had unraveled from one of his gloved fingers and caught on something. There are lots of metal angles it could have jammed against, but he'd felt no sharp edges, no burrs to snag his glove.

Sgt. Allen checks a hanger bearing on the tail-rotor drive shaft. Opening the tail-boom cover exposes one side for inspection but leaves the back side hidden... and he felt something very important on the back.

He stood on his tiptoes and hugged the tail boom so he could peer over the drive shaft for a better look. The thread from his glove was stuck to a perfectly smooth, slightly discolored spot on the coupling. He bent nearer, his eye straining to make something out of the color change. Inches from the piece, looking at it upside down, something suddenly leapt into focus. A thin crack ran the length of the cone. It looked like discolored metal; it felt smooth, but it was a crack.

The Cobra was pulled off the flight schedule, and the part replaced. On the shop bench, the crack was plainly visible. It penetrated through the metal and would have failed soon — perhaps on the next flight... my flight.

The bang would have been loud, the loss of tail-rotor torque immediate, and the loss of control disastrous. I'd have slammed into the ground at very high speed, but for Sgt. Allen's thread. ◄

Maj. DeHart flies with HMLA-773.

You Just Don't Understand the Problem!

by LCdr. Mike Donigan, USN (Ret.) and Bill Gregory

An aircrew flew an SH-60F for a post-maintenance check flight (PMCF) after a phase-C inspection and wrote up a discrepancy on fluctuating turbine gas temperature (TGT). During the next two PMCFs, maintenance tried to correct the gripe by removing the engine-history recorder (a shade-tree holdover from the SH-60B community), but the problem persisted.

After the third PMCF, the pilot wrote at the bottom of the outstanding up-gripe, "Got erroneous TGT readings, down to zero on shutdown." No one downed the aircraft, but the day-check supervisor of the electrical shop directed work to begin on the TGT problem anyway.

During shift change, both the day- and night-check supervisors decided the aircraft was down, based on the TGT discrepancy, and issued a MAF after informing maintenance control. Night-check personnel later confirmed the aircraft was down after starting to troubleshoot the SH-60.

Just after maintenance troops began working on the gripe, the maintenance master chief (MMCPO) checked with the night-check supervisor on the night's work and next day's aircraft availability. When he learned of the new downing MAF, he demanded it be torn up. He believed the supervisors didn't understand the problem, and he thought the engine-history recorder (which had been removed) had been causing the TGT problem.

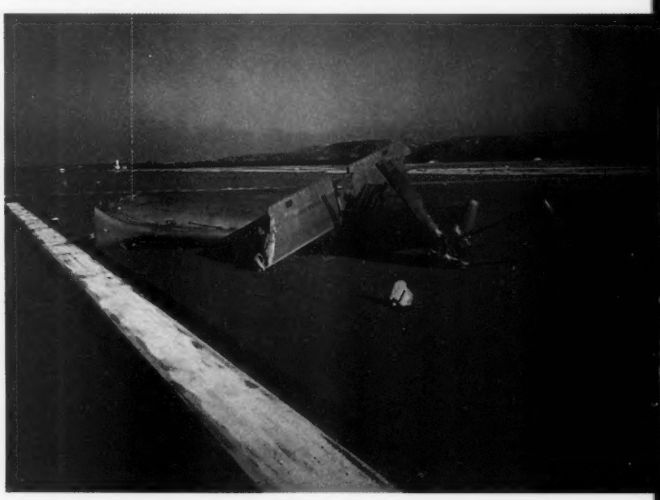
The night-check SCPO maintenance controller relented, tore up the MAF, directed a QAR to stop the electricians and ordered the aircraft buttoned up. Later, the night-check shop supervisor complained to the day supervisor about upping the aircraft, but neither did anything about it. The following morning, maintenance control released the SH-60F for a SAR-training flight.

During the first event, the pilots watched No. 1 engine TGT and Np (power-turbine speed) drop to zero. They saw low No. 1 TQ (torque) and high No. 1 Ng (gas-turbine speed). They also saw No. 2 engine with high TGT, Np, TQ and Ng, then observed main rotor rpm approaching overspeed. The HAC took control, aborted the SAR event, declared an emergency and flew to the nearest field, four miles away.

En route, the HAC incorrectly assessed the problem as a high-side failure of the No. 2 engine and reduced power. When the helo was abeam the intended point of landing, the rotor rpm increased. The HAC elected to take manual control of No. 2 engine and reduced power to idle. He initiated autorotation.

Sixty feet above the ground, he transitioned to a run-on landing. The copilot called out 80 percent main-rotor rpm. The HAC pulled full collective, depleting rotor rpm. The helicopter crashed vertically on the runway, tail first. A $44-million aircraft with less than 500 airframe hours had been destroyed.

Following autorotation, this SH-60F landed hard enough for the tail boom to separate from the fuselage, which rolled over on its side.



The helo — what's left of it — was moved into a hangar for further investigation. The crew survived because the main fuselage held together.

Investigators found nothing mechanically wrong with the helo, but they discovered that the yellow harness cannon plug to the hydromechanical unit (HMU) was loose. Test cell runs revealed that both engines and related fuel-control components were fully functional. When they disconnected the yellow harness on the test cell, engine indications duplicated those reported by the pilots. During an additional test with the yellow harness off, they reduced the load on the engine to simulate unloading the main rotor. A rapid increase in engine rpm immediately followed up to the point of overspeed and automatic engine shutdown. The test indicated the No. 1 engine shut down when the HAC reduced collective during autorotation.

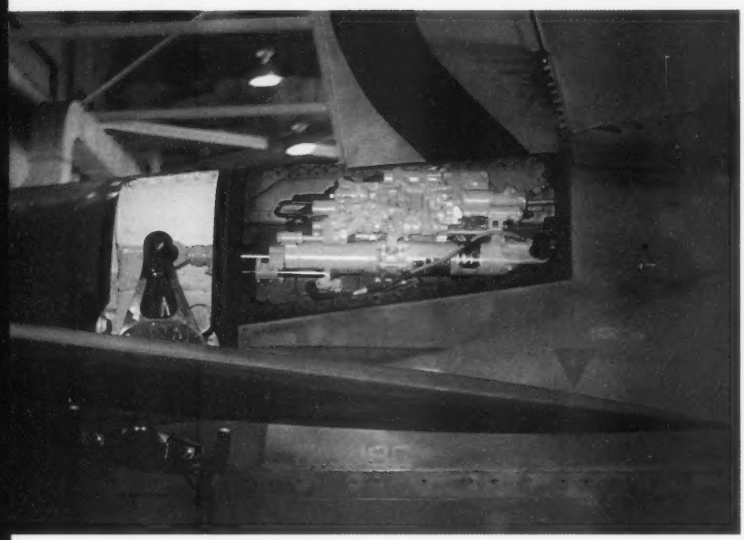
Maintenance control's failure to address a repeat discrepancy resulted in a Class A mishap. An MMCPO coerced his maintenance-control senior chief (night check) into tearing up a discrepancy on fluctuating TGT. The aircraft had been downed with the consensus of the electrical shop's day-check and night-check supervisors. Armed with the belief that these shop supervisors didn't have a firm grasp of this repeat discrepancy, relying on his own considerable experience, and seeing a need for this aircraft on the next day's flight schedule, the MMCPO felt compelled to make his SCPO maintenance controller round-file the discrepancy. ◀

LCdr. Donigan was a mishap investigator at the Naval Safety Center before he retired. Mr. Gregory is an investigator and assistant department head of the Naval Safety Center's Aircraft Mishap Investigation Division.

If no one had scrubbed the MAF, the electricians might have found the loose cannon plug during troubleshooting.

The Phantom in the

by AMS1(AW) Steven E. Haugh



This new horizontal-stabilizer servo is the reason for the drop check. Drop-checking the aircraft is part of the open-loop method of purging air out of a system with a hydraulic test-stand (jenny).

Free air in a reservoir or compressed air mixed in hydraulic fluid will dramatically degrade hydraulic systems. If you replace a component or open the hydraulic system for repairs that could introduce air, you must bleed that system. If you don't get rid of the air, you'll get poor performance, your hydraulic fluid will deteriorate, and your hydraulic components will fail prematurely. Look it up in the NA-01-1A-17 under air bleeding.

Airframe mechanics have heard the lectures and learned countless lessons about how air in hydraulic systems can put us behind the eight ball. You won't find air with a patch test, but you can see it blow out seals and destroy hydraulic components. It'll send you on wild goose chases to correct everything from BLIN codes to sloppy flight controls and spongy brakes. Therefore, you have to monitor how your systems are serviced, who services them, and be ready to train those who will service them later.

We take it a step further in our work center. We don't just do a closed-loop air-bleed when

Air is the phantom.

We can't see it, but we know it's there.

We breathe air to live and drive our pneumatic tools with it.

Our jets need it to fly — but they don't need it in their hydraulic systems.

The ground coordinator gives last-minute instructions to the drop-check crew. When he's ready to raise the landing gear, he'll coordinate with the man in the cockpit by means of the communications hookup lying on the deck on the starboard side of the Hornet's nose.

Hydraulic System

we change a component or open a system. Our SOP calls for a complete open-loop bleed (with a jenny) on any aircraft hydraulic system that has been opened or had a component removed from it. We also jack the aircraft during phase inspections, cycle the landing gear, and open-loop bleed the hydraulic systems.

If you have a gripe that keeps coming back and you can't duplicate it on the deck, check for air in the system. If you open-loop bleed that system in accordance with the MIMs, you probably won't see that gripe again. It does take a little longer to do a job that way, and maintenance control will probably pester you for the aircraft. Just tell them what you're doing, why you are doing it, and explain how the hydraulic system works.

When that aircraft can stay on the flight schedule because you maintained system integrity and ensured the aircraft hydraulic systems are as free of air as possible, maintenance control will understand and appreciate your efforts. In order for our jets to operate at the tip of the spear; they have to be the best they can be.➤

Petty Officer Haugh is assigned to VFA-137.

The landing gear has just been cycled in an attempt to purge air out of the HS-2 hydraulic system. The drop-check crew is awaiting instructions from the coordinator.

The landing gear is retracting. Note the positions of the nose and mainmounts.

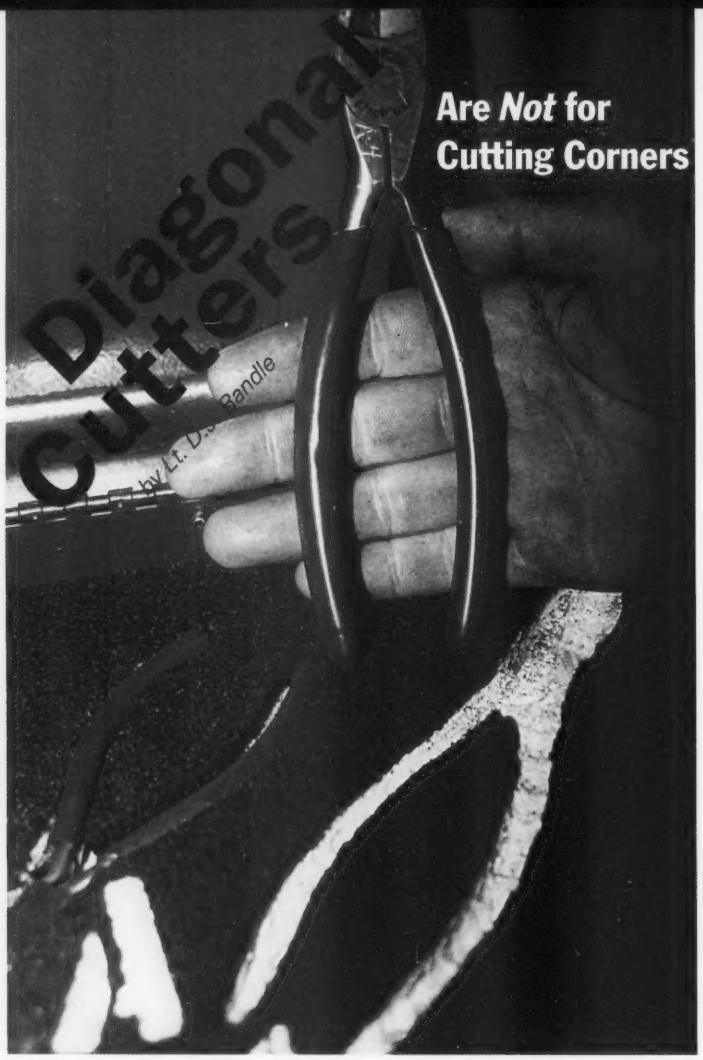
ORM in a Hurry

- Identify Hazard
- Assess Risks
- Make Risk Decisions
- Implement Controls
- Supervise

The time and level of detail involved in the ORM process varies with time available and the level of understanding of the hazards associated with the operation. Time-critical ORM requires a quick mental review or discussion using the five steps when time won't allow anything more.

Diagonal Cutters Are *Not* for Cutting Corners

by Lt. D.J. Randle



SOP is for the work center supervisor to inventory toolboxes at the end of every shift and for a CDI to do it at the beginning and end of every job. Using shadow boxes, why did it take so long to discover we were missing a pair of diagonal cutters?

For 44 days, our exercise (COMPTUEX) had been going great. The air wing never had a bare firewall. We'd issued 14 engines and had none left in AIMD to work on. With only three days to go, our thoughts turned to home and Christmas.

A new power-plants bulletin gave us three F-404 inductions two days before the flyoff.

With two RFI engines on the rails and the third an exrep, power plants shifted into high gear. Day-check people even stayed up until 0300 to wring out the last engine on the test cell. By 0715, everything was looking fine. The last engine had completed a run, QA had looked it over, and the squadron was happy. AIMD power plants had saved the day again.

At 1230, I got word that a pair of diagonal cutters was missing from a toolbox we'd used. My first thought was, "Why did it take so long to discover a missing tool?" The answer revealed a long list of disturbing maintenance practices:

- The toolbox had not been inventoried since 1900 the previous night.
- That 1900 inventory had been done by an E-3, not the work center supervisor.
- The same toolbox had been used to work on at least two engines at the same time.
- I said that QA had looked over the engine. They had, and when the QAR finished his initial check at 0630, he noted five discrepancies. The engine was issued at 0715 and had already been installed before he saw it again. The QAR never had a chance to verify the corrected discrepancies.

The aircraft missed its scheduled flyoff.

The diagonal cutters surfaced at 1600 when a boatswain's mate came in to power plants to return them. He'd found them on the fantail earlier that morning. The entire debacle could have been averted if we'd used correct tool control.

Toolbox inventories must be done by the work center supervisor at the end of every shift and by the CDI at the beginning and end of every job. No community toolboxes. Finally, QA must be totally involved in the process of issuing engines. They provide final approval before we ask an aviator to trust his life to our engine.

We did not need any new procedures after this incident. The procedures were already there — we just didn't follow them. ◄

Lt. Randle is the IM-2 division officer on board USS *Theodore Roosevelt* (CVN 71).

Caught Between a Shock and a Wet Place

by ATC(AW) Lyndon Nelson

Several years ago, I scared myself so badly the fright is still fresh in my mind. Maybe reading about it will keep someone from welding himself to an airplane.

A dark, moonless night is not a good time to work on jets, especially when the ship's deck is slicker than a hockey rink. My A-6E was spotted on the fantail, facing starboard, with a power receptacle close to port. With only 3 feet between me and the ramp, I tried to plug in the power cord while my buddy positioned himself as the designated energizer.

Unfortunately, the Intruder's power-receptacle door got in the way of the cord. People usually hold the doors open with their heads while they insert power cords, which is what I did that night. I propped the door open with my cranial (head, minus brain, attached). Just as I was connecting the cord, my buddy energized it.

I remember thinking, "That's funny, I don't remember seeing a forecast for thunder-storms and lightning in the area. Wow! What a show! Hey, wait a minute — that's not lightning., that's arcing between the flight deck, tie-down chains, and the drop tank of my aircraft! What now, Batman?"

All I could think of was, "I'm in contact with a metal aircraft and 8.1 gigawatts of electrical current. Gotta jump backward to avoid getting welded. Yeah, that's the ticket. Whoa, slippery rounddown, lots of water." I must have looked like the proverbial cat on a hot tin roof as I scampered my way back to the level surface of the flight deck, thinking, "Secure from man overboard."

Once my heart rate dropped below Mach 1, we inspected and found the power cord had been badly cut many times, and the conductor was exposed in several of them. One of the cuts had been on top of a tie-down chain. When power was applied, the light show began.

We also found a very sharp deck combing that the power cord had been repeatedly dragged over. If people had pulled the cord out of its station without dragging it on the combing, the cord would not have been damaged in the first place. Even better, if I had inspected the cord before using it, I might have avoided the impromptu cardiac-stress test. I know that sounds like Monday-morning quarterbacking, but if you use your head only as a hanger for cranial helmets and to hold open access panels, what happened to me could happen to you. ◄

Chief Nelson works in VFA-195's maintenance department.

PCs rest the power-receptacle door on their heads in order to have both hands free for the power cable. In the story, the author was standing in water when he saw and heard fireworks all around him.

Mr. Do-It-All Got Nailed

by AMS2 Brian K. Wilson

There are three major airframe tasks in preparing an S-3B for service at sea: inspect the hook point, service the tires and clean the hoist points. My squadron was flying FCLPs during the short period between the ship pulling out and CQ. We did the pre-carrier inspections one step at a time when the aircraft were available, saving the tires for last. Sounds easy, doesn't it?

I was assigned to a beach det during this period. We were short of experienced people and CDIs, but we were coping. As the only airframes CDI on the beach, I had to make sure our aircraft were ready and safe to go aboard the CV. I also had to make sure our special inspections were done according to the MIMs and maintenance instructions. Add a few nicks and dings that needed attention, and you can see a good deal of work piling up on three people. I voiced some displeasure, then allowed my can-do spirit to override my common sense. That's when the trouble began.

...with maintenance secured and all the tools locked up, I couldn't inspect...

If the threads in the hoist points aren't clean, the crash and salvage crew won't be able to lift the airplane because their fittings won't fit.

Because the bulk of the command was deployed, watches came around fast for those of us left on the beach. It was my turn to stand duty as squadron SDO, leaving a junior E-3 and a brand new LPO, with no S-3B experience, to do the pre-carrier inspections. I retained my duties as CDI while on watch.

After a few hours, the E-3 brought the paperwork for the pre-carrier inspection to me for signing as CDI. By this time, it was early evening and maintenance had secured. I decided to inspect the work while making my rounds on the flight line. However, with maintenance secured and all the tools locked up, I couldn't inspect the hoist points. I signed the MAF anyway and left it on the det CPO's desk.

I had exceeded my authority. I was so busy being Superman that I failed to monitor the work in progress — a CDI's first responsibility. I let aircraft go to sea without clean hoist points, a fact the crash-and-salvage CPO quickly discovered upon inspecting our aircraft.

I broke the faith — a point my XO and CO formally made ever so clear. I'd had the authority to stop this mess from coming about simply by making sure the work was done according to the book.

It might have ruffled some feathers in maintenance control and created a few more hours of work, but it would have avoided an embarrassing situation for my command and saved me from the darkest two days of my Navy career. ➤

AMS2 Wilson is airframes supervisor for night check in VS-33.

CROSSFEED

ALSS

Cdr. Jim O'Dell
Head, Aviation Maintenance and Material Division

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Bang Goes the SEAWARS

by PRCS(AW) Mike J. Beck

Bang! I hate that sound—especially when someone is working on a cartridge activated device (CAD). The parachute harness sensing release system (SEAWARS) has been around for years, but the Naval Safety Center still gets many explosive-mishap reports (EMRs) on SEAWARS CADs that have fired. The most common cause is a rigger reversing the probes of a multimeter while testing battery voltage. One West-Coast rigger even wrapped safety wire around the probes to extend them.

A lack of training and supervision always bites you when you get too comfortable with your job. Granted, every incident is different, but supervisors, CDIs and CDQARs need to be vigilant and stay on the job to counter that mind-set.

Is the person who fires off a CAD decertified? Take a good look at your command's ordnance-certification program. SEAWARS is an important piece of lifesaving equipment and costly to replace.

One final note: NAVAIR 13-1-6.2 (WP 005 00, pg. 12, figure 1) requires the tips of the probes on your multimeter to be covered with heat shrink. Check to see if your multimeter has it installed; if it is, what condition is it in?

Senior Chief Beck is a maintenance analyst at the Naval Safety Center. He recently reported from VP-16.

Place Your Bets, Place Your Bets!

by AMEC(AW) Larry Beilharz

Are you familiar with acceptance, turnaround, daily, pre- and post-flight, and transfer-inspection requirements for LOX converters? I'm sure that last question has many of you scratching your heads. "LOX-converter inspections? What's this Chief talkin' about?"

There are six types of LOX converters used in Navy and Marine Corps aircraft. The Aviation-Crew Systems Oxygen Equipment Manual (NA 13-1-6.4) discusses inspection requirements and procedures to be done on all six.

Some procedures in the NA 13-1-6.4 may be done by O-level maintenance while others must be accomplished by an I-level activity. To do these inspections you need a pressure gage/relief valve test fixture, a vent-port-drain line, and a LOX-converter-drain line, all manufactured in accordance with guidelines in the NA 13-1-6.4. Do you have those tools?

These inspections diminish the chance of developing a critically over-pressurized LOX converter. Are you aware that different converters have different over-pressurization indicators? By the way, which indications tell you if your LOX converter is critically over-pressurized, hmm?

While I have your attention, what does your ship or station's emergency bill have to say about handling critically over-pressurized LOX converters? Are you still willing to bet your life you know what you're doing? If you're unsure about any aspect of LOX servicing, then a thorough review of the NA 13-1-6.4 and local maintenance instructions is in order. When it comes to handling LOX, there's no room for gambling.

AMEC(AW) Beilharz is a maintenance analyst at the Naval Safety Center.

The PR's Guide to TD Management

by Lt. Barrie Hartley, Royal Navy

Survey teams from the Naval Safety Center find that some squadrons and IMAs are not complying with ALSS technical directives (TDs). TDs are important in ensuring ALSS equipment is used and configured correctly. Here are a couple of tips on how you can make that happen.

• Paraloft supervisors should visit QA once each week to review the TD weekly summary message and learn what ACCs or ACBs (TD Code 66 and 67) were issued in the past week.

• Get a copy of the ALSS TD list (NATO4 report) from the wing or AIMD NALDA operator. This computer printout is a complete list of aircrew systems changes and bulletins and is updated daily by NAMO. The NATO4 report lists TDs under equipment type to make it user friendly. It is essential for TD configura-

tion control. Get a NATO4 regularly — at least once a quarter. Then use the TD weekly summary message to update your NATO4 between printouts.

Another common problem: Some activities are removing ALSS TDs from history records or re-dating the TDs when they generate a new history card. *Don't do that!* Valuable historic data is erased and the record compromised when you re-date TDs. This could cause a major problem if a fleetwide check of history records is ordered for a TD verification. Re-dating TDs is saying you incorporated that TD on that date. Just think, it could be your QA number the fleet is checking for when in fact someone else did the work. This could have serious consequences because the fleet would not be checking the right equipment. Here's the way to keep accurate records:

- Do not delete TDs from history records until the affected equipment is removed from service or replaced.
- Ensure the date, QA number and work center recorded in the TD boxes of the history record reflect when, by whom and where the TD was done.
- Record all completed TDs, amendments and revisions. If an issued TD has two amendments and a revision, you should have four TDs recorded in the history record.

ALSS TDs are no different than other TDs when it comes to program management. The tips provided here can help parachute riggers control TD configuration records but are not intended to override local instructions.

These codes will help you to understand the NATO4 report

66 or 67.....TD Code: e.g ACC or ACB
BASC.....TD Number: e.g., 0684
IRA..... I-Interim Change, A, B, etc. Revision and 1, 2, etc. - Amendment
KT..... Mod Kits Required
ML.....Maintenance Level: 1=O, 2=I, 3=D
PRI.....Priority: R=Routine,U=Urgent, I=Immediate
INX Status of TD..... A=Advanced Info, B=Active, C=Canceled, D=Rescinded
Issue Date..... Date TD was issued
Resc Date..... Date TD Rescinded. i.e., Date that CFA anticipates all equipment will be modified or checked and TD moves to historic files.
Est TD Mhr.... Estimated manhours to comply with TD.
WUC.....Work Unit Code.
Title.....Covers the topic.

Lt. Hartley was the ALSS branch head at the Naval Safety Center and an exchange officer from England until he returned to the Royal Navy in August.

LINE/SUPPORT EQUIPMENT

Do You Feel Lucky?

by AMCS(AW) Ed Winnett

A helicopter returns from a flight. As soon as it stops in a parking spot, ground personnel enter the area beneath the turning rotor to install pins and chocks without clearance from the pilot or PC. Meanwhile, when the pilot tries to set the parking brake, his foot slips off the rudder pedal. The abrupt pedal movement causes a large dip in the tip-path of the main rotor. The path of the blade tips is close enough to the ground to hit anyone under that portion of the rotor arc. Luckily, no one is there.

In another incident, a pilot tells the tower shortly after taking off that he is returning because of problems retracting his landing gear. Anxious to get the hop out, troubleshooters quickly theorize why the gear malfunctioned. They decide on a quick fix that requires one person to check out a switch on the main landing gear while someone else goes aboard the aircraft to brief the crew on the plan.

As soon as the plane is parked, one man goes aboard while the other goes under the aircraft. The maintainer on board briefs the flight crew on the troubleshooting plan to get them airborne. He also directs them to reset the gear system by cycling the gear handle up and then down. When the pilot questions how safe this procedure is, he is assured that system interlocks don't allow landing-gear movement while the aircraft is on the deck. The pilot, unaware that someone is under the aircraft, reluctantly follows the reset instructions and moves the gear handle to up. The landing gear retracts, allowing the aircraft to settle on and crush the troubleshooter beneath it.

The potential for death or serious injury was obvious in both incidents. The people in the first instance simply lucked out by being a few feet away from certain death while the man in the second incident wasn't so lucky. Dirty Harry likes to ask, "Do you feel lucky? Well, do you... punk?" Whether you do or not, SOP requires us to notify the PC and be cleared before entering the danger areas around operating aircraft.

AMCS (AW/NAC) Winnett is a maintenance analyst at the Naval Safety Center. He has relieved AZCS(AW) Dan Steber as the Maintenance Crossfeed editorial coordinator.

Holdback Adapters Require Special Inspections

by ADCS(AW) Ron Albert

During safety surveys, I've noticed that inspections on holdback adapters are frequently missed. Required Place-in-Service, Pre-Op/30-day (which ever occurs first) and annual NDI requalifications have been getting done and are documented properly. However, people managing the SE/IMRL programs have not been aware of the 36-month inspection requirement (a pull test/proof-load). NAVAIR 17-1-537, WP 012 00, para. 56 tells us to forward holdback adapters to depot maintenance every 36 months or whenever they fail to pass 12-month inspections. The depot will rework the adapter, do a proof-load test, and follow that up with a qualification inspection.

Inspections for anything that holds back, holds down, lifts up, or restrains, cannot be taken for granted. This is a classic case where studying the book could keep you from missing a critical inspection.

Senior Chief Albert is a maintenance analyst at the Naval Safety Center.

SUPERVISION

Ignoring SOP Isn't Smart

by AMCS(AW/NAC) Ed Winnett

When an entire community ignores SOP, something must be wrong with the procedure. A recent message reported personnel who got hurt falling off the aircraft they were washing. The wing that sent the message conducted an informal survey and found that none of their squadrons were following the SOP intended to prevent people from falling off aircraft during a wash job. In most cases, the reason given was that it was too difficult to comply with.

The procedures in NA 01-1A-509 call for wearing a harness and safety lines while washing elevated areas of aircraft that can't be reached from maintenance stands. Perhaps the people wouldn't ignore that directive if the fall was 15 to 20 feet instead of only 6 feet. It's amazing how attitudes and compliance with SOP change with an increase in working altitude and chance of serious injury.

Following risk assessment, management asks, "Do the benefits outweigh the cost?" In this case, what previously was an inconvenient SOP suddenly became a viable safety requirement. There have always been people more willing to risk injury than to enforce safety measures. If we all adopted this philosophy, no one would wear a cranial, eye protection or any other personal protective equipment because it's inconvenient.

The Safety Center's data bases are filled with mishap and injury reports that describe people who did not follow SOP. If this is beginning to sound a little like you, ask yourself, "Is there a better way to do business?"

Dodging Bullets

by AMCS(AW/NAC) Ed Winnett

During a daily-and-turnaround inspection, a PC found a chewing-tobacco container only inches from the flight-control rods. Records showed the aircraft had flown extensively during the last 30 days, but no maintenance had been done in this compartment during that period.

We've written rules, established tool inventories, tightened the control of consumables, and even sewn the pockets of coveralls shut trying to eliminate FOD from aircraft maintenance. Items as common as a nickel have cost aircraft and lives. Because of this close call, the command heightened FOD awareness by instituting a buddy system to check each other for FOD before doing maintenance.

Just in case some of you are wondering, I was told that not one of that command's pilots chews tobacco.

NADEP reported that its artisans found a few surprises during the disassembly phase of an SDLM. They found a zip-lock bag containing 22 dome-nut screws inside a port horizontal-pivot-access panel. They also found a cotton bag containing five screws in the port elevator's trim-tab-control-linkage-access panel, and a second cotton bag with five screws inside the port elevator's flutter-damper door.

Holy hardware! What ever happened to checking for FOD before closing up access panels? Especially those critical areas like flight controls. I don't think ops tempo can be blamed for this one. Any item that doesn't get inventoried, or requires an ATAF, shouldn't go to the airplane. What has your command done lately to fight maintenance-induced FOD? Don't wait for a close call before taking action, your next FOD might be right on target.

OPNAV 3710.7Q Crossword Puzzle

DOWN

1. Old term for Class B airspace.
2. The _____-and-_____concept applies to visual flight conditions, thus eliminating the need for specific route clearance from ATC agencies under most conditions.
3. Automatic Terminal Information Service. (*abbrev.*)
6. Decision height. (*abbrev.*)
8. _____ clearance.
9. Naval aviator's scientific approach to problem solving.
11. High Intensity Runway Lights. (*abbrev.*)
17. The PIC of a naval aircraft flight shall ensure that a copy of the _____ is on file with a responsible agent at the point of departure prior to takeoff.
19. Regardless of weather, _____ flight plans shall be filed and flown whenever practicable as a means of reducing the potential for midair collision.
20. Duty in a flying status for an officer involving operational or training flights.
21. Acronym for flight information publication.
22. A signature by the pilot in command/formation leader on the flight plan certifies (among other things) adequate flight-planning data, including _____ service, was available, complete and accurate.
24. An attempted arrested landing on a carrier in which some portion of the aircraft, such as the landing gear or hook, touches the deck, but the arresting gear is not engaged, and the aircraft keeps flying.
27. Military operating area. (*abbrev.*)
29. _____ instrument time will be logged by both pilots in a dual/multipiloted aircraft during flight in this kind of instrument conditions.
31. A published departure procedure.
33. A type of precision approach.
34. If an alternate is not required, fuel to fly from takeoff to destination airfield, plus a reserve of _____ percent of planned fuel requirements is required.

ACROSS

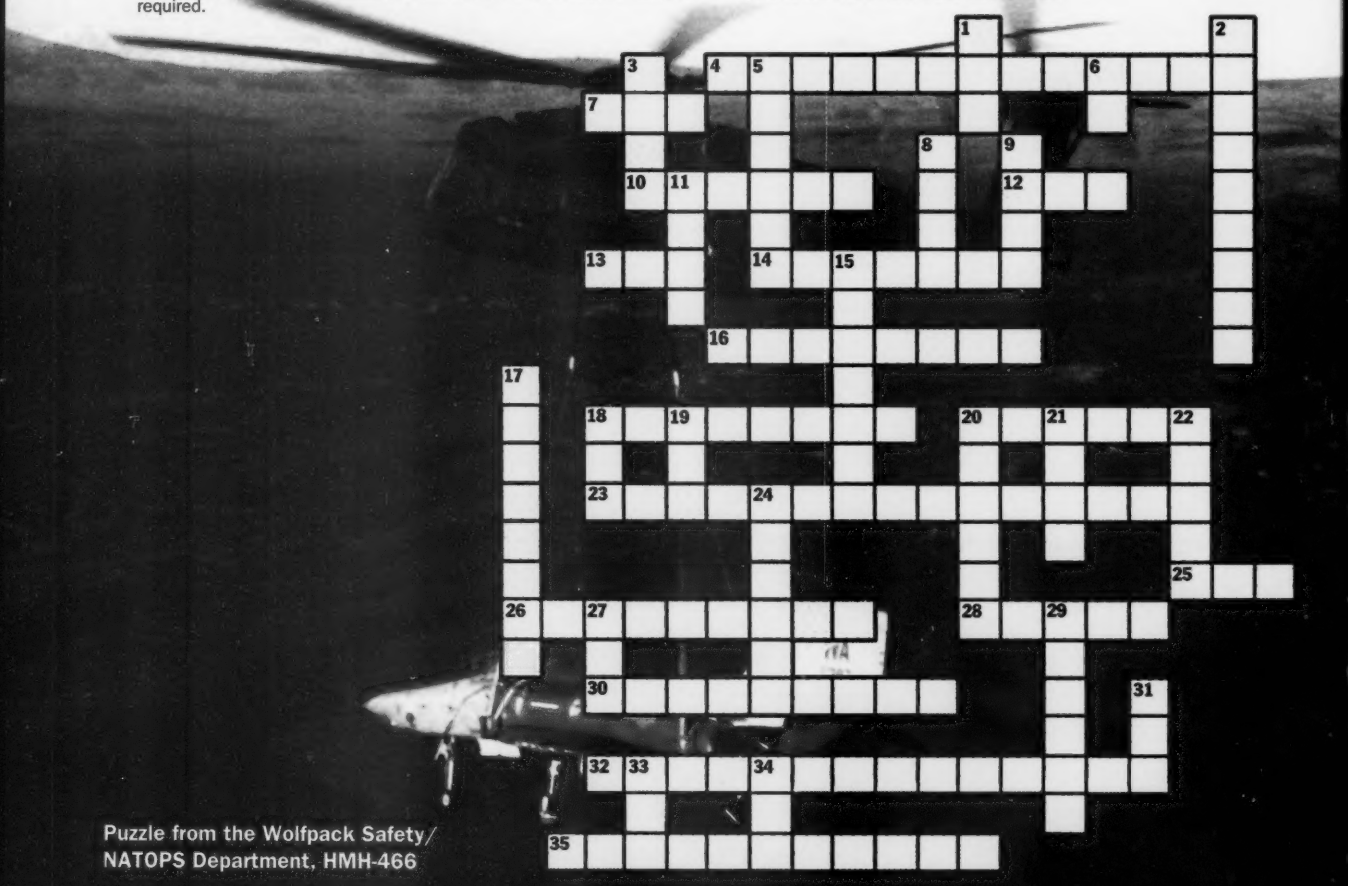
4. A _____ _____ or abbreviated single copy DD-175 may be authorized by the approval authority when the flight will be conducted within the established local flying area.
7. Military training route. (*abbrev.*)
10. "_____" means the procedure is recommended.
12. Way point. (*abbrev.*)
13. A type of precision approach.
14. A return to the surface.
20. Duty in a flying status for an officer not involving flying.
23. An intentional maneuver involving an abrupt change in aircraft attitude, intentionally performed spins, or other maneuvers requiring pitch and dive angles greater than 45 degrees, bank angles greater than 60 degrees, or decelerations greater than 2 G's.
26. _____ instrument time shall be logged only by the pilot at the controls.
28. _____ means procedure is mandatory.
32. Closing of the flight plan is the responsibility of the _____ ___ _____/ formation leader.

MIXED

A. Weather criteria for filing. Flight plans shall be filed based on all of the following:
   (a.) The (5 down) weather at the point of departure at the time of clearance.
   (b.) The (18 across) and (16 across) weather for the entire flight.
   (c.) (35 across) and (30 across) forecasts for one hour before (18 down) until one hour after estimated time of arrival.

B. (25 across) and (15 down) mean the procedure is optional.

(Answers in November-December issue.)



Puzzle from the Wolfpack Safety/ NATOPS Department, HMH-466